

Anderson Metropolitan Planning Organization  
Columbus Metropolitan Planning Organization  
Indiana Department of Transportation  
Indianapolis Metropolitan Planning Organization

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# Air Quality Conformity Analysis

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## 2007 Amendments to the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Regional Transportation Improvement Program

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### Indianapolis Ozone Nonattainment Area

Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby

### Indianapolis PM 2.5 Nonattainment Area

Hamilton, Hendricks, Johnson, Marion, and Morgan

January 29, 2007 Draft for Public Review and Comment

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## Introduction

Required under section 176(c) of the Clean Air Act, as amended in 1990, the transportation conformity rule established the criteria and procedures by which the Federal Highway Administration, the Federal Transit Administration, and metropolitan planning organizations (MPOs) determine the conformity of federally funded or approved highway and transit plans, programs, and projects to state implementation plans (SIPs). Conformity ensures that transportation planning does not produce new air quality violations, worsen existing violations, or delay timely attainment of national ambient air quality standards. According to the Clean Air Act, federally supported activities must conform to the implementation plan's purpose of attaining and maintaining these standards. Rule guidelines for conformity were most recently amended in July 2004 (**69 CFR 40004**).

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval. The conformity criteria is satisfied if the current transportation plan and TIP have been found to conform to the applicable implementation plan by the MPO and DOT according to the procedures of EPA rules. Only one conforming transportation plan or TIP may exist in an area at any time; conformity determinations of a previous transportation plan or TIP expire once the current plan or TIP is found to conform by DOT. The conformity determination on a transportation plan or TIP will also lapse if conformity is not determined according to the EPA specified frequency requirements.

*Transportation Plan* means the official metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450. The *Transportation Plan* must be consistent with the mobile vehicle emissions budget(s) in the applicable implementation plan (**40 CFR 51.428**).

*Transportation improvement program (TIP)* means a staged, multiyear, intermodal program of transportation projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan, and developed pursuant to 23 CFR part 450. The *TIP* must be consistent with the mobile vehicle emissions budget(s) in the applicable implementation plan (**40 CFR 51.430**).

This air quality conformity analysis accompanies amendments proposed in 2006 to the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Regional Transportation Improvement Program. The analysis meets requirements for two overlapping nonattainment areas in Central Indiana.

### 8-hour Ozone Nonattainment Area

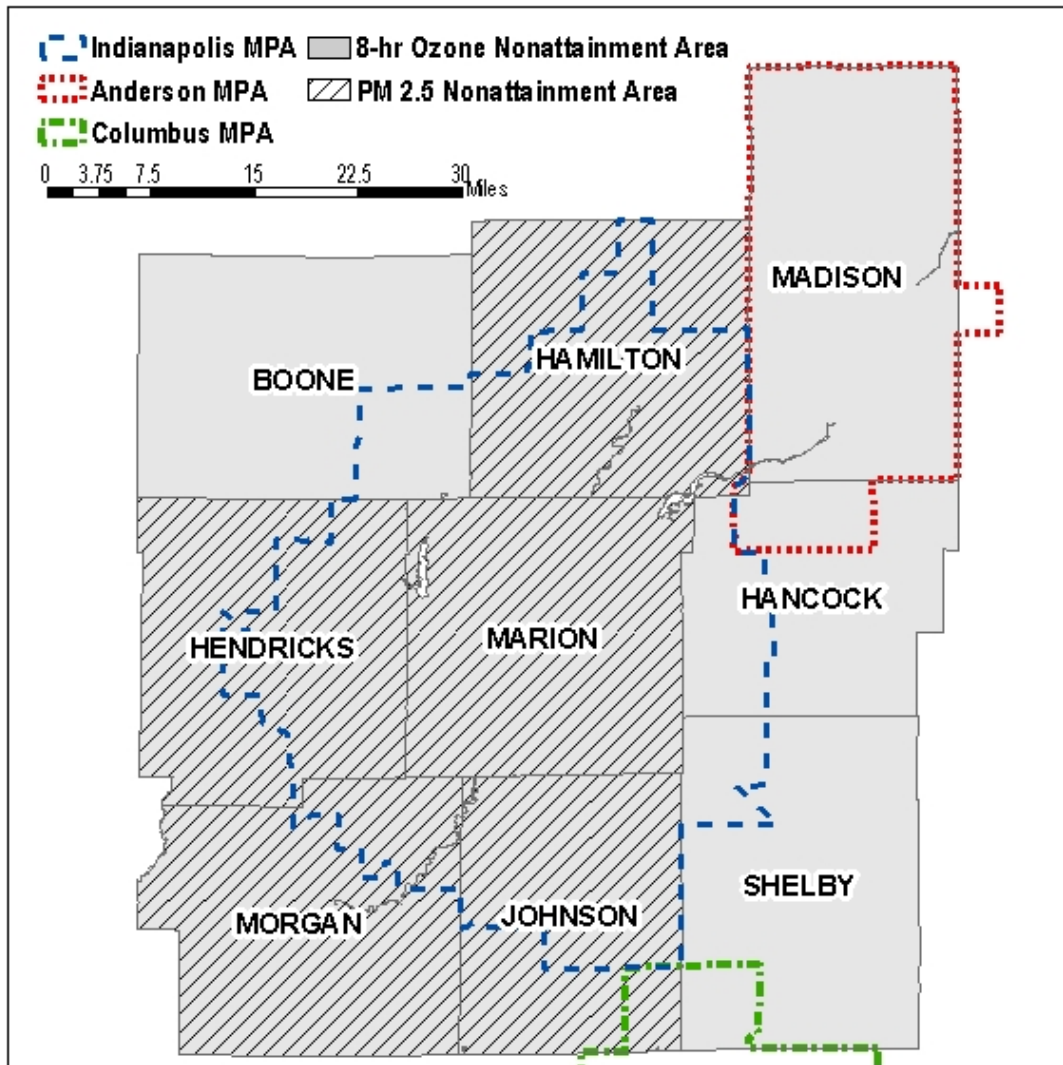
In June 2004, nine counties were designated by the U.S. Environmental Protection Agency (EPA) as a basic nonattainment area under the 8-hour standard for ozone. The counties included in this designation are: Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby.

### PM 2.5 Nonattainment Area

In April 2005, the EPA designated five counties as a basic nonattainment area under the annual standard for fine particulate matter (PM 2.5). The counties included in this designation are: Hamilton, Hendricks, Johnson, Marion, and Morgan.

As shown in Figure 1, both nonattainment areas include at least a portion of the transportation planning jurisdictions of three metropolitan planning organizations and the Indiana Department of Transportation. Working closely with staff from regulatory agencies and planning jurisdictions, Indianapolis MPO staff assumed responsibility for modeling, analysis, and preparation of this document.

Figure 1: Ozone and PM 2.5 Nonattainment Areas



Final approval of proposed 2007 amendments to the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Regional Transportation Improvement Program requires a *single* conformity finding from the U.S. Department of Transportation for both nonattainment areas and all affected planning jurisdictions. Contingent on approval of this document, this conformity finding is expected in March/April 2007.

The ultimate objective of conformity analysis is to compare estimated emissions of selected pollutants and precursors to budgets jointly established by the EPA and the Indiana Department of Environmental Management (IDEM) and documented in a State Implementation Plan (SIP).

The SIPs for both the 8-hour ozone standard and the annual PM 2.5 standard are not expected to be available until 2007 or 2008. Accordingly, this conformity determination utilizes an interim methodology approved by the EPA and IDEM, as follows: Both nonattainment areas will utilize a "baseline test", comparing emissions forecasts for relevant pollutants in 2010, 2020, and 2030 to those for 2002. Emissions forecasts for the latter years must not be greater than those for 2002.

## Need for Analysis

The need for conformity analysis is triggered by amendments to any regional transportation plan or regional transportation improvement program involving additions, removal, or a change in time period for any regionally significant project. Amended transportation plans and programs for jurisdictions within or partially within nonattainment areas must have a conformity finding from the U.S. DOT before they may be implemented.

This analysis is triggered by amendments proposed in 2007 to the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Regional Transportation Improvement Program. There are no proposed amendments to regional plans or programs for the Anderson MPO or the Columbus MPO at this time.

## Transportation Plans and Transportation Improvement Programs

The Anderson, Columbus, and Indianapolis MPOs currently have transportation plans with a planning horizon of 2030, which meets the minimum 20-year planning horizon required of MPOs. Arm-in-arm with the transportation planning process, the three MPOs and INDOT have developed transportation improvement programs (TIPs) outlining projects scheduled for federal funding over the next three years (FY 2007-2010). The TIPs are consistent with the transportation plans that have undergone air quality modeling, and conformity findings are applicable to them as well.

### List of Projects

A comprehensive list of projects included in this Air Quality Conformity Analysis of the 2030 Transportation Plans are presented in Appendix A. 11" X 17" Color-coded maps are included in Appendix F to help locate these projects.

### Years of Action Scenarios

Based on interagency consultation, it was agreed to conduct the following target years for analysis related to the 8-hour ozone and PM 2.5 nonattainment areas:

- 2002 (New SIP Inventory Year to which all other modeled years will be compared)
- 2010 (attainment year for 8-hour ozone and PM 2.5)
- 2020 (intermediate year allowing no more than ten years between modeled years)
- 2030 (current horizon year of relevant Regional Transportation Plans)

In addition, until the State Implementation Plans for 8-hour ozone and PM 2.5 are developed and approved, projects in Marion County alone must continue to be modeled according to the years established in the 1-hour ozone SIP: 2006, 2009, 2015, 2020, and 2030.

## History and Review of Air Quality Status and Documents

### One Hour Ozone Standard

In 1978, the consolidated City of Indianapolis and Marion County was designated as a nonattainment area for ozone per EPA's one hour standard. The City and IDEM submitted a "Maintenance Plan" on November 12, 1993 to revise the Indiana's State Implementation Plan (SIP) and redesignate Marion County as attainment for ozone per requirements in Section 110, Part D of the Clean Air Act of 1990. With EPA's approval of the revised SIP in 1995, the Marion County Maintenance Plan used 1996 as a base year and established a budget for mobile sources in the target year of 2006 to achieve continuing progress toward maintaining the ozone attainment status

for Marion County. The Indianapolis MPO used this SIP budget alone for conformity analyses until June 2004.

### Eight Hour Ozone Standard

On June 15, 2004, the Central Indiana 9-County region was designated as nonattainment for the 8-hour ozone standard. This region includes the planning areas of the Indianapolis and Anderson MPOs, and a small portion of that of the Columbus MPO. Until the SIP for the 8-hour standard is developed (expected in 2007), conformity for the 8-hour ozone standard will be based on an interim test as agreed upon by the consultation group. A baseline test ensures that emissions estimates for all analysis years are less than those for the baseline year 2002. MPOs in the 9-County region received an initial conformity finding for 2030 Plans and current Transportation Improvement Programs in June 2005.

### Annual Fine Particulate Matter (PM 2.5) Standard

In April 2005, the EPA designated a 5-County area in Central Indiana (Hamilton, Hendricks, Johnson, Marion, and Morgan Counties) as nonattainment for the annual PM 2.5 standard. This region includes much of the planning area of the Indianapolis MPO and very small portions of planning areas of the Anderson and Columbus MPOs. Until the SIP for the annual PM 2.5 standard is complete (expected in 2008), conformity analyses will follow an interim *baseline test* as agreed upon in consultation with planning partners and regulatory agencies. Similar to that for the 8-hour ozone standard, this analysis must ensure that emissions estimates for all analysis years are less than those for the baseline year 2002. MPOs overlapping the 5-County nonattainment area expect an initial conformity finding for 2030 Plans and current Transportation Improvement Programs in March 2007.

### Previous Reports

This is the fifteenth report addressing the transportation air quality conformity requirements since 1995. The first three documents explain the technical details of transportation, air quality relationships and other related factors associated with the forecast of regional emissions. Reports four through six document analyses for the Indianapolis 2020 Transportation Plan and related Transportation Improvement Programs (TIPs). Reports seven through eleven address conformity analyses for the Indianapolis 2025 Regional Transportation Plan and TIPs. The twelfth addresses conformity for Indianapolis 2030 Regional Transportation Plans and associated TIPs within the 9-County ozone nonattainment area. The thirteenth addresses conformity for the 5-County PM 2.5 nonattainment area. The last document covered both ozone and PM 2.5 during the regular 2006 amendment process.

- 1) Technical Memorandum for Task 21 - Tools for Air Quality Conformity Analysis, 1995
- 2) Technical Memorandum for Task 36 - Air Quality Conformity, 1995
- 3) Air Quality Overview Report, 1996
- 4) Air Quality Conformity Reexamination Report, 1997
- 5) Air Quality Conformity Reexamination Report, 1998
- 6) Air Quality Conformity Reexamination Report, 1999
- 7) Air Quality Conformity Reexamination Report, May 2000
- 8) Air Quality Conformity Report, December 2000
- 9) Air Quality Conformity Analysis, February 2003
- 10) Air Quality Conformity Analysis (I-69), June 2003
- 11) Revised Air Quality Conformity Analysis, June 2004
- 12) Air Quality Conformity Analysis, June 2005
- 13) Air Quality Conformity Analysis, March 2005
- 14) Air Quality Conformity Analysis, February 2006

## Technical Steps

The EMIS air quality model was developed in response to the conformity requirements of the federal Clean Air Act Amendments and the requirements of the Intermodal Surface Transportation Efficiency Act (ISTEA), the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), and the Safe, Accountable, Flexible, Efficient Transportation Equity Act- A Legacy for Users (SAFETEA-LU). It uses the U.S. Environmental Protection Agency's MOBILE 6.2 computer application and a custom-written FORTRAN application to estimate daily mobile source emissions associated with transportation alternatives.

### Link-Based Speed

For explanatory purposes, a “*link-based speed*” method best describes the approach used to estimate daily mobile source emissions. First, emission factors (estimated grams of NOx, HC, and PM 2.5 emissions per vehicle mile) are generated for freeways and arterial streets by average travel speed from 3 mph to 65 mph. Estimated daily emissions are then calculated for each individual link by multiplying the modeled vehicle miles traveled (VMT) by the relevant emission factor. The following hypothetical data illustrates an example link for which estimated direct emissions of fine particulate matter (PM 2.5) in winter of 2010 are 26.3 g/day:

<b>County</b>	Johnson
<b>Facility Type</b>	Arterial
<b>Year</b>	2010
<b>Modeled vehicle miles traveled (VMT) per day</b>	1,000 VMT
<b>Modeled Average Speed</b>	30 mph
<b>Emission Factor for Direct PM 2.5 (p. 68)</b>	0.0263 g/mi/day
<b>Estimated daily emissions on link</b>	1,000 VMT*0.0263 g/mi/day = <b>26.3 g/day</b>

Emissions are summed for analysis by geographic area, facility type, and/or average speed.

EMIS acts as a “shell” application, running successive scenarios of the MOBILE 6.2 model using the latter’s “AVERAGE SPEED” command. Scenario records are generated beginning at 3.0 mph, then at 5.0 mph and increasing in 5 mph increments to 65 mph. These scenarios are run for both Non-ramp freeway and Arterial facility types, resulting in 28 scenarios for each set of environmental inputs.

MOBILE 6.2’s “VMT BY FACILITY” command is then used to generate emission factors for centroid connectors, intrazonal trips and freeway ramps. The centroid/intrazonal scenario uses a custom input file that specifies that all VMT occurs on local roads for all possible vehicle types. Similarly, the ramp scenario uses a custom input file that specifies that all VMT occurs on ramps for all possible vehicle types. This method does not require an estimate of average speed.

EMIS develops a consistent set of emissions factors by facility type and (for freeways and arterials) by speed. These emissions factors are expressed in grams per vehicle mile of travel. These factors are then applied to outputs from regional travel models, resulting in daily emissions estimates.

The Indianapolis MPO uses a validated speed capacity table to arrive at network speeds, which considers area type (e.g., Central Business District, Residential, Rural), facility type (e.g., Freeway, Arterial), lanes, and hourly capacity. Emissions factors are then applied to the travel model on a link-by-link basis. The Indianapolis MPO process matches by facility type, but interpolates between the two closest emissions factors based on speed.

## Converting from Daily to Annual Emissions Estimates

The PM 2.5 pollutant is associated with an annual standard requiring annual emissions estimates, which presents a range of issues for modelers across the U.S. accustomed to modeling daily estimates.

The MOBILE 6.2 model only has the capability of estimating emissions on the basis of mass of pollutant per mile using one set of environmental inputs (temperature, humidity, etc.), which fluctuate with the seasons. For some pollutants, emission factors may vary significantly based on these inputs. While this is not the case for PM 2.5 directly emitted from tailpipes, it is certainly the case for NO<sub>x</sub>, a monitored precursor to PM 2.5. Since Central Indiana experiences significant climate change throughout the year, it would be inaccurate to assume that emissions of NO<sub>x</sub> would not vary by season. Thus, MOBILE 6.2 and EMIS were run four times using Central Indiana environmental inputs appropriate for each of the four seasons. The average of the resulting daily emissions estimates was multiplied by 365.25 to produce an annual estimate (see next page for details).

In some regions, seasonal changes in travel behavior due to tourism or an influx of part-time residents result in highly varied VMT throughout the year. Since this analysis simply compares future emissions forecasts to the baseline year 2002, daily VMT was assumed to be the same throughout any given year. However, seasonal travel fluctuations may be accounted for in future conformity analyses.

Appendix B outlines the modeling system in more detail. Appendices D-1 through D-5 provide records of MOBILE 6.2 inputs, outputs, and reports generated by EMIS for analysis of ozone. Appendices E-1 through E-5 provide these records related to analysis of PM 2.5.





## Summary and Conclusion

Federal regulations governing air quality conformity require that for each nonattainment area, certain time periods be analyzed to estimate emissions of relevant pollutants and precursors from mobile sources. For each analysis year modeled, the implementation of planned and programmed capacity enhancement projects is reflected using best planning assumptions. Table 1 summarizes current modeling requirements for each criteria pollutant.

**Table 1: Summary of modeling requirements by criteria pollutant**

Criteria Pollutant	Geographic Area	Pollutants and Precursors	Conformity Test	Analysis Years
Carbon Monoxide <sup>1</sup>	16 Block area, Downtown Indianapolis	CO	N/A	N/A
8-Hour Ozone	9 County Nonattainment Area Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, & Shelby	NOx & HCs (precursors to ozone)	Baseline Test Emissions forecasts in future years must not exceed 2002	2002 2010 2020 2030
	Marion County Until the 8-hour ozone SIP is approved, this must be modeled seperately	NOx & HCs (precursors to ozone)	Emissions forecasts must meet budgets developed for the 1-hour ozone SIP	2006 2009 2015 2020 2030
Annual Fine Particulate Matter (PM2.5)	5 County Nonattainment Area Hamilton, Hendricks, Johnson, Marion, Morgan	Direct PM 2.5 & NOx (precursor to PM 2.5)	Baseline Test Emissions forecasts in future years must not exceed 2002	2002 2010 2020 2030

As shown in the following pages, all mobile source emissions forecasts are well below the 2002 estimates (or in the case of Marion County, the 2006 budget for the 1-hour standard). Since the proposed amendments do not affect projects within Downtown Indianapolis, analysis for CO is not required. Once amended as proposed, the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Transportation Improvement Program will conform with federal requirements for all criteria pollutants.

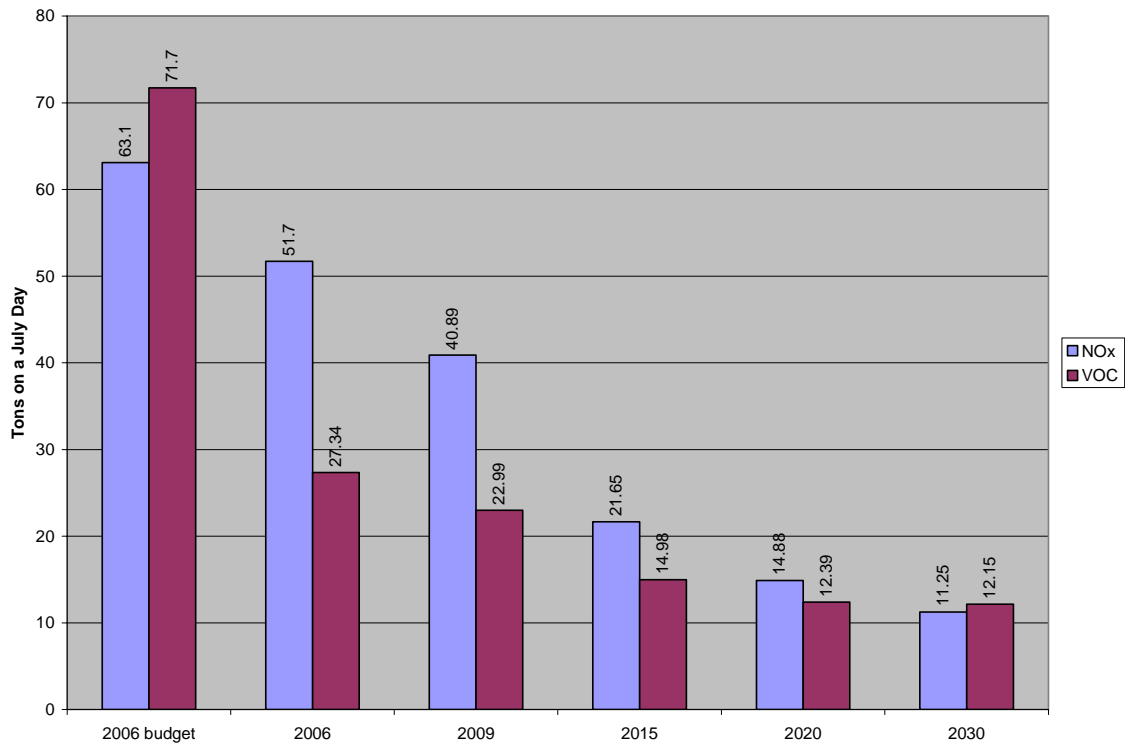
<sup>1</sup> The proposed amendment does not involve projects within the sixteen block area. Therefore, no analysis of CO has been prepared in conjunction with this amendment.

## 8-hour Ozone Standard

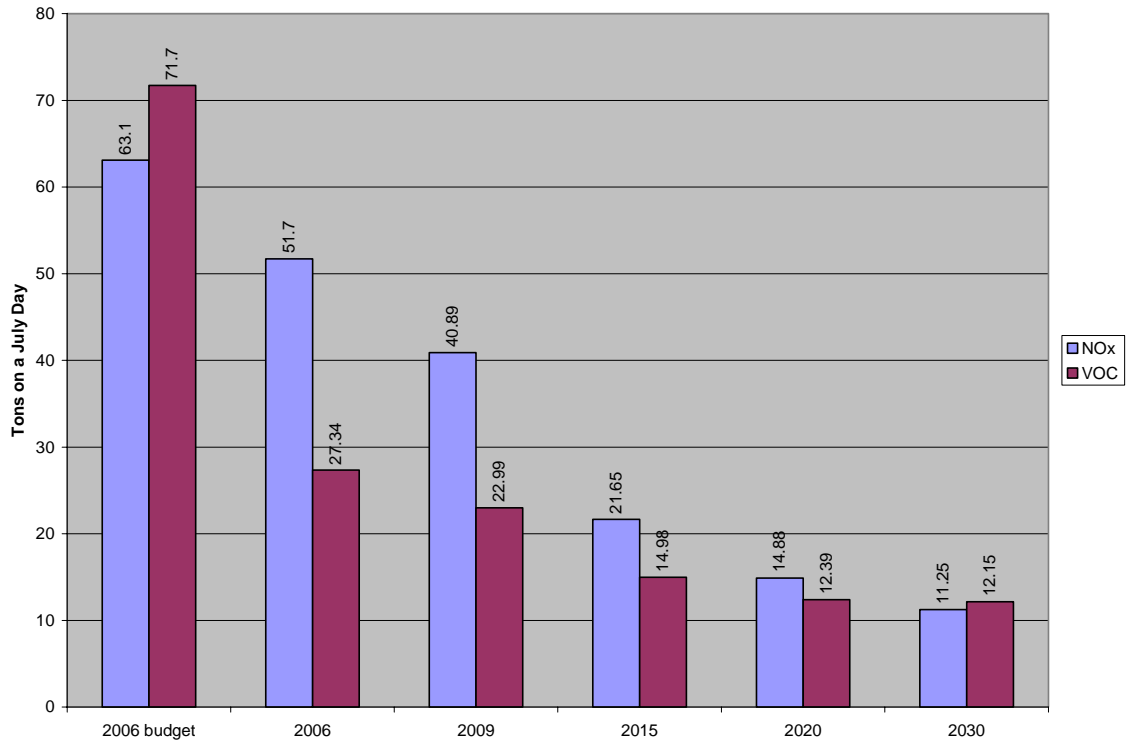
Ground level ozone levels are highest in the summer, as heat catalyzes its formation from hydrocarbon and nitrous oxide precursors. Since ozone is not directly emitted from vehicles, the mobile source emissions of HCs and NOx are instead modeled. To obtain emissions forecasts for these precursors, environmental conditions for a typical July day are assumed throughout the modeling process<sup>2</sup>. Consistent with federal requirements, mobile source emissions forecasts of ozone precursors, NOx and HC, were modeled for 2002, 2010, 2020, and 2030. As illustrated in Figure 2, emissions forecasts for future years are much lower than 2002 estimates.

Figure 3 illustrates results of analysis in Marion County as compared to a 2006 budget developed in the SIP for 1-hour ozone. As shown, mobile source emissions forecasts for 2009, 2015, 2020, and 2030 are well below the 2006 budget for Marion County. Inputs and sample modeling results related to analysis of the 9 county ozone nonattainment area are included in the Appendices.

**Figure 2: Mobile source emission forecasts for 9 County nonattainment area**



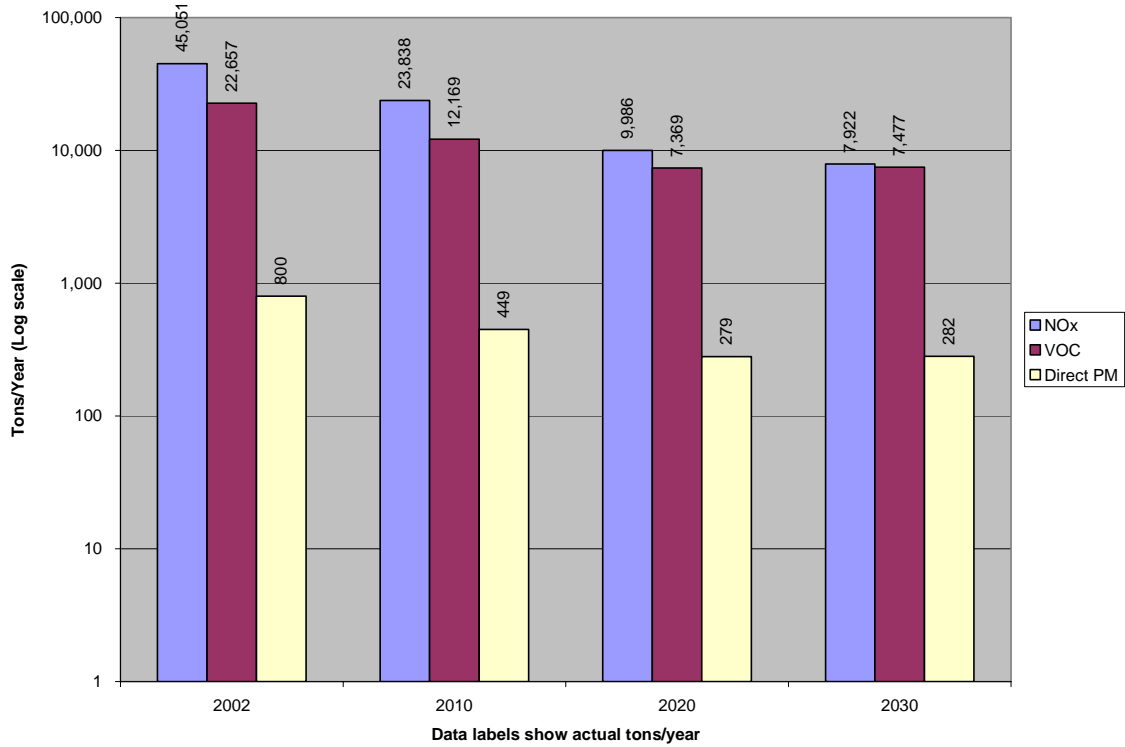
**Figure 3: Mobile source emission forecasts for Marion County**



### PM 2.5 Annual Standard

Figure 4 illustrates annual mobile source emissions forecasts of nitrous oxides and direct fine particulate matter in the nonattainment area for 2002, 2010, 2020, and 2030 (VOC's are shown for comparison purposes, but are not evaluated as part of the standard). These annual values were converted from daily emissions forecasts from each of the four seasons.

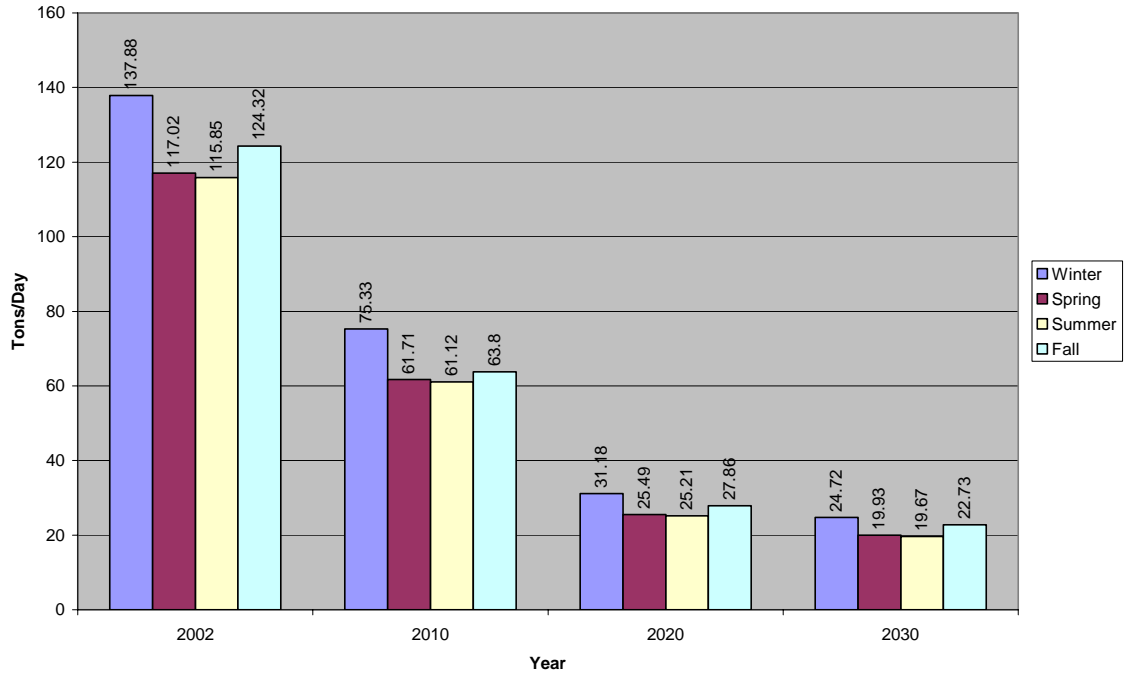
**Figure 4: Mobile source emission forecasts for VOC, NOx and Direct PM 2.5 in the 5-County nonattainment area**



As previously explained, in order to forecast annual emissions of direct fine particulate matter and its precursor, NOx, daily emissions are first modeled for each of the four seasons. Figures 5a and 5b illustrate the seasonal variability of NOx and Direct PM 2.5 as modeled.

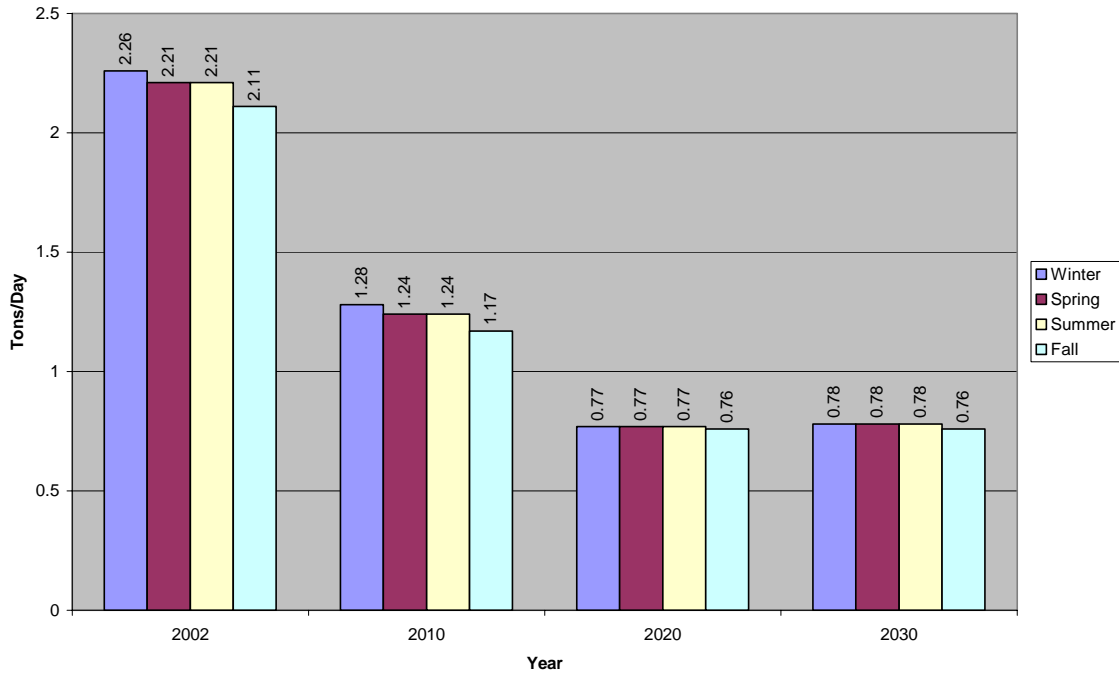
**Figure 5a: Daily mobile source emissions estimates for NOx by season**

**NOX (5-county nonattainment area)**



**Figure 5b: Daily mobile source emissions estimates for Direct PM 2.5 by season**

**Direct PM 2.5 (5-county nonattainment area)**

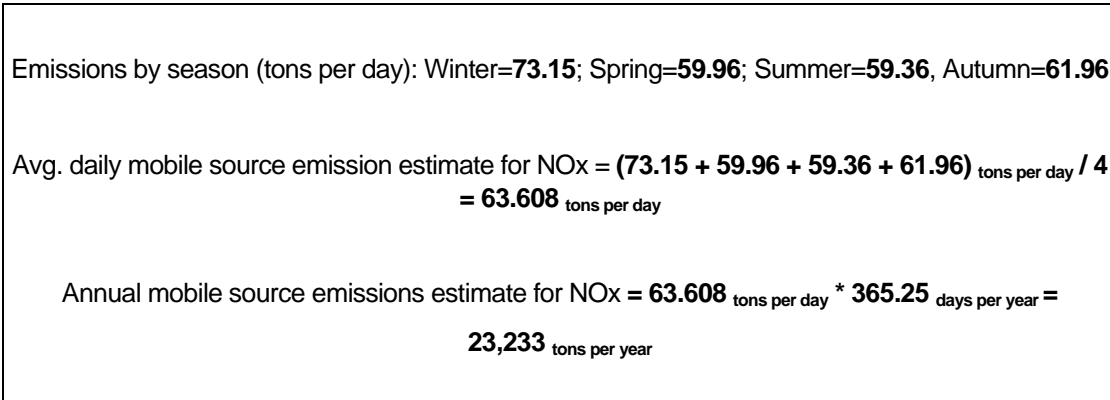


Most of the variation in NOx can be explained by the negative affect of colder temperatures on

engine efficiency. As shown, PM 2.5 directly emitted from tailpipes does not vary significantly by season.

After tabulating daily emissions for the 5 County area, their average is multiplied by 365.25 to derive an annual forecast (see Figure 6). Although this procedure may become more complex as budgets for the SIP are developed, the current methodology adequately meets federal requirements and was agreed upon by the Air Quality Consultation Group.

**Figure 6: Example of daily to annual conversion for NOx**



## Approval Timeline

Indianapolis MPO staff intends to seek approval by the Policy Committee of the Indianapolis Regional Transportation Council (IRTC) on **February 28, 2007** for amendments to the Indianapolis 2030 Regional Transportation Plan and 2007-2010 Indianapolis Regional Transportation Improvement Program accompanied by this analysis.

If approved by the IRTC, the amendments and analysis will go before the Indianapolis Metropolitan Development Commission (MDC) for adoption on **March 7, 2007**.

Following adoption by the MDC, the amendments and air quality analysis will undergo up to 30 days of review by the U.S. Department of Transportation. Federal air quality regulations require that the amendment receive a conformity finding in writing from the U.S. DOT as a final approval. Final approval of the proposed amendment is expected in **late March/early April 2007**.

## Public Comment

Prior to approval by the Indianapolis Regional Transportation Council and the Indianapolis Metropolitan Development Commission, this document and associated air quality analysis will be available for public comment for approximately thirty days beginning on Monday, January 29, 2007. Please direct any comments by phone, e-mail, mail, or fax to Philip Roth by Monday, February 26, 2007.

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# APPENDICES

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Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
HEN	INDOT	2006-2010	96	I-74 (94-IDT-1126)	Interchange on Ronald Reagan Parkway	Add Diamond Interchange	State	\$ 9,000,000
			911	SR 267	.1 mi N. of I-74 to .5 mi N. of I-74	W 2-In. to 5-In.	State	\$ 4,130,000
		2011-2020	94.1	I-70	Six Points to .75 mi W of SR 267	W 6-In. to 10-In.	State	\$ -
			128.2	Rockville Rd. (US 36)	SR 267 Corridor to MAR/HEN Co Line	W 5-In. to 6-In. div.	State	\$ 70,000,000
			140	State Rd. 267	SR 67 to SR 267 S. of I-70	New 2-In. on 4-In. div. ROW	State	\$ 4,746,028
			702	I-70	At SR 267	Int. Mod.	State	\$ 15,450,000
			910	US 36	Placeholder for US 36 Danville Connector	New 4 In.	State	\$ 26,000,000
		2021-2030	901	I-70	US 231 to .5 mi W of SR 267	W 4-In. to 6-In.	State	\$ 140,000,000
	BBRG	2006-2010	1006	Northfield Dr.	56th St. to .5 mi N. of 56th St.	W 2-In. to 4-In.	Local	\$ -
			1008	56th St.	Northfield Dr. to CR 900 E	W 2-In. to 5-In.	Local	\$ -
	HEN	2006-2010	115	Ronald Reagan Pkwy	US 40 to CR 100 S	New 2-In. on 4-In. div. ROW	Urban	\$ 4,131,764
			116.2	Ronald Reagan Pkwy	CR 100 S to US 36	New 2-In. on 4-In. div. ROW	Urban	\$ 6,058,227
			117	Ronald Reagan Pkwy	300N to US 136	New 2-In. on 4-In. div. ROW	Urban	\$ 9,892,591
			1007	56th St.	CR 900 E to Raceway Rd.	Reconst./W to 4-In. div.	Local	\$ 3,890,141
			627	CR 100N (10th St.)	Raceway Rd. to SR 267	W 2-In. to 4-In.	Urban	\$ 10,000,000
	2011-2020	124.1	Perimeter Pkwy NE	US 40 to SR 267	W 2-In. to 4-In.	Urban	\$ 1,750,000	
	PLAIN	2006-2010	1004	Perimeter Pkwy SE	SR 267 E. to Perry Rd., N. to Stafford Rd.	W 2-In. to 5-In.	Local	\$ -
			1005	Perimeter Pkwy SW (Moon Rd.)	South approach to US 40	W 2-In. to 5-In.	Local	\$ -
			1005	Perimeter Pkwy SW (Hadley Rd.)	SR 267 to Center St.	W 2-In. to 4-In.	Local	\$ -
			124.2	Perimeter Pkwy NW	Vestal Rd. to SR 267	W 2-In. to 4-In.	Urban	\$ 1,750,000
		2011-2020	1005	Perimeter Pkwy SW	Center St. to new S. approach at US 40	W 2-In. to 4-In.	Local	\$ -

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
JSN	INDOT	2006-2010	106.1	Meridian St. (SR 135)	CR 700 N (Stones Crossing Rd.) to CR 850 N	W 2-ln. to 4-ln. div.	State	\$ 5,000,000
		2011-2020	89.1	I-65 (outside UZA)	0.5 mi S.of Whiteland Rd. to 0.5 mi S of Grwd Rd. + 1 int.	W 4-ln. div. to 6-ln. div.	State	\$ 30,930,000
			89.2	I-65	0.5 mi S of SR 44 to 0.5 mi S of Whiteland Rd. + 1 int.	W 4-ln. div. to 6-ln. div.	State	\$ 31,270,000
			89.3	I-65	.05 mi S of SR 252 to 0.5 mi S of SR 44 + 1 int	W 4-ln. div. to 6-ln. div.	State	\$ -
			106.2	Meridian St. (SR 135)	SR 144 to CR 700 N (Stones Crossing Rd.)	W 2-ln. to 4-ln. div.	State	\$ 10,700,000
			369.2	I-69	MAR/JO Co Line to SR 144	Add new 6-ln. freeway	State	\$ 36,177,358
			618	I-65	0.5 mi S of Grwd Rd. to 0.5 mi S of Co. Line Rd + 1 int.	W 6-ln. div. to 8-ln. div.	State	\$ 11,000,000
	2021-2030	907	SR 135	SR 252 to SR 144	W 2-ln. to 4-ln.	State	\$ 25,800,000	
		908	SR 144	SR 37 to SR 135	W 2-ln. to 4-ln.	State	\$ 10,000,000	
		909	SR 144	Johnson Rd (CR 400 E) to SR 37	W 2-ln. to 4-ln.	State	\$ 17,900,000	
	GRWD	2006-2010	913	Graham Rd.	Main St. to Co Line Rd.	W 2-ln. to 5-ln.	Urban	\$ 6,670,000
		2011-2020	71	Greenwood Rd.	Interstate 65 to Arlington Ave.	W 2-ln. to 4-ln. div.	Rural	\$ 2,173,698
			133.2	Smith Valley Rd.	Meridian (SR 135) to East St. (US 31)	W 2-ln. to 4-ln. div.	Urban	\$ 167,000,000
MOR	INDOT	2011-2020	369.3	I-69	SR 144 to MPA Boundary	Add new 6-ln. freeway	State	\$ -

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
HAM	INDOT	2006-2010	17	SR 32	Spring Mill Rd. to US 31	W 2-ln. to 4-ln. div.	State	\$ 5,100,000
			101	Keystone Ave. (SR 431)	96th St. to US 31	W 4-ln. div. to 6-ln. div.	State	\$ 15,000,000
			108.2	Michigan Rd. (US 421)	.89 mi N of I-465 to 121st. St.	W 2-ln. to 4-ln. div.	State	\$ -
			615	I-69	SR 238	Interchange Modification	State	\$ 4,500,000
		2011-2020	17.2	SR 32	US 31 to Moontown Rd.	W 2-ln. to 4-ln. div.	State	\$ 6,546,000
			78.2	Huntington Ave. (SR 37)	SR 37 from I-69/116th St. to just N of SR 32/SR 38	W 4-ln. div. to 6-ln. div.	State	\$ 9,846,215
			81	I-465	At US 31, Interchange Modification	W 6-ln. div. to 10-ln. div.	State	\$ 106,675,000
			90	I-69	At 116th St.	Int. Mod.	State	\$ 1,000,000
			91	I-69	0.5 mi S of 96th St. to .5 mi N of SR 37/116th St. + 2 int.	W 6-ln. div. to 10-ln. div.	State	\$ 153,646,863
			105	US 31 Fwy Upgrade	96th to I-465	W 6-ln. to 8-ln.	State	\$ 483,000,000
			105	US 31 Fwy Upgrade	I-465 to 106th	W 6 ln. to 10-ln.	State	\$ -
			105	US 31 Fwy Upgrade	106th to 116th	W 4-ln. to 8-ln.	State	\$ -
			105	US 31 Fwy Upgrade	116th to 146th	W 4-ln. to 6-ln.	State	\$ -
			105	US 31 Fwy Upgrade	146th to 151st	W to 10-ln.	State	\$ -
			105	US 31 Fwy Upgrade	151st to SR 38	W to 6-ln.	State	\$ -
			105	US 31 Fwy Upgrade	SR 38 to 216th	W to 4-ln.	State	\$ -
			615	I-69 (North)	.5 mi N of SR 37/116th St. to 0.5 mi N of Old SR 238 + 1 int.	W 4-ln. div. to 6-ln. div.	State	\$ 30,000,000
			902	SR 32	SR 37 to the East junction with SR 38	W 2-ln. to 5-ln.	State	\$ 3,830,000
			903	SR 32	Moontown Rd. to River Ave.	W 2-ln. to 5-ln.	State	\$ 7,338,000
			905	SR 37	2.38 mi N of SR 32 to 3.46 mi N of SR 32	W 2-ln. to 4-ln.	State	\$ 3,460,000

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
HAM	CAR	2006-2010	6	116th St.	Range Line Rd. to College Ave.	W 2-In. to 4-In.	Urban	\$ 2,000,000
			303	116th St.	Range Line Rd. to Keystone Ave.	W 2-In. to 4-In. div.	Special	\$ 1,440,000
			304	Old Meridian Corridor	Pennsylvania St. to Guilford	W 2-In. to 4-In. div.	Special	\$ 1,350,000
			305	122nd St.	Pennsylvania St. to Adams St.	W 2-In. to 4-In. div.	Special	\$ 3,200,000
			306	116th St.	Keystone Ave. to Gray/Moontown Rd.	W 2-In. to 4-In.	Urban	\$ 2,400,000
			334	Range Line Rd.	136th St. to U.S. 31	W 2-In. to 4-In. div.	Special	\$ 3,750,000
			335	River Rd.	116th St. to 146th St.	Roadway reconstruction	Special	\$ 9,400,000
			336	Veteran's Way	Executive Drive to City Center Drive	New 3-In. roadway	Local	\$ 5,000,000
			675	Illinois St.	103rd to 136th	New 4-In. div. Roadway	Local	\$ 15,900,000
	2011-2020	10	131st St.	Keystone Ave. to Cherry Tree Rd.	Reconst./W to 4-In. div.	Urban	\$ 12,117,562	
	2021-2030	5	116th St.	Spring Mill Rd. to Meridian St.	Reconst./ W to 4-In. div	Urban	\$ 2,677,136	
		151.2	Towne Rd.	146th St. to 141st St.	W 2-In. to 4-In. div.	Rural	\$ 1,784,728	
		811	Spring Mill Rd.	131st St. to 146th St.	W 2 to 4 In. div.	Urban	\$ 3,279,635	
		820	131st St.	Cherry Tree Ln to River Ave.	W 2 to 4 In. div.	Urban	\$ 3,301,945	
	FIS	2006-2010	35.1	96th St.	Village Way to Lantern Rd.	W 2-In. to 4-In. div.	Urban	\$ 1,285,218
			37.1	Allisonville Rd.	141st St. to S. of 126th St.	W 2-In. to 4-In. div.	Urban	\$ 6,105,268
			37.2	Allisonville Rd.	S. of 126th St. to Shadow Lawn Dr.	W 2-In. to 4-In. div.	Local	\$ 3,898,544
			38	Allisonville Rd.	Shadow Lawn Dr. to 106th St.	W 2-In. to 4-In. div.	Urban	\$ 3,162,970
			39	Allisonville Rd.	106th St. to Hamilton Hills Ln.	W 2-In. to 4-In. div.	Local	\$ -
			40	Allisonville Rd.	Hamilton Hills Ln. to 96th St.	W 2-In. to 4-In. div.	Urban	\$ 2,133,166
			912	126th St.	Allisonville Rd. to Olio Rd.	W 2-In. to 4-In.	Urban	\$ 23,000,000
	2011-2020	35.2	96th St.	Lantern Rd. to Sargent Rd.	W 2-In. to 4-In. div.	Urban	\$ 1,397,591	
		36	Allisonville Rd.	146th St. to 141st St.	W 2-In. to 4-In. div.	Urban	\$ 3,677,872	
	HAM	2006-2010	33.1	96th St.	US 421 to Shelbourne Rd.	W 2-In. to 4-In., Int. Imprv	Local	\$ -
			806	Olio Rd.	113th St. to 96th St. + Bridge over Geist Res.	W 2 to 4 In. div.	Urban	\$ 5,354,506
			824.1	146th St.	SR 37 to I-69	New 4-In. roadway	Special	\$ 1,000,000
			2011-2020	824.2	146th St.	SR 37 to I-69	W 4-In. to 6-In.	Special
			1003	146th St.	Hamilton/Boone Co Line to Springmill Rd.	W 2-In. to 4-In.	Local	\$ -
2021-2030			151.1	Towne Rd.	141st St. to 96th St.	W 2-In. to 4-In. div.	Urban	\$ 9,369,823
	823	96th St.	I-69 to Cumberland Ridge	W 4 to 6 In. div.	Urban	\$ 1,802,157		
NBSVL	2006-2010	824.3	Boden Rd.	Greenfield Ave. to 146th St.	New 2-In.	Special	\$ -	
	SHER	2006-2010		Unnamed Road	New 2-In	Special	\$ -	

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
MAR	INDOT	2006-2010	85.1	I-465 (West)	.56 Mi N of US 40 to 34th St. + 3 int.	W to 10-In.,mod. interch.	State	\$ 25,650,000
			86	I-465	N of I-70 to S of US 40 + 1 I-change	W 6-In. div. to 10-In. div.	State	\$ -
				I-465 (North)	Allisonville Road to I-69	W 6-In div to 8-In div	State	\$ -
			93	I-69	0.5 mi S of I-465 to 0.5 mi S of 96th St + 2 int. at I-465 & at 86th St.	W 6-In. div. to 8-In. div.	State	\$ -
			99	State Rd. 67	HEN Co. Line to Thompson Rd.	Intersection Improvements	State	\$ 7,620,000
			120	Pendleton Pike (US36/SR67)	I-465 to Post Rd. (94-IDT-1002A)	W 4-In. to 6-In. div.	State	\$ 660,000
			121	Pendleton Pike (US36/SR67)	Post Rd. to Oaklandon Rd.	W 2-In. to 4-In. div.	State	\$ 2,900,000
			122	Pendleton Pike (US36/SR67)	56th St. to 65th St. (94-IDT-1049)L.A.	W 2-In. to 4-In. div.	State	\$ 5,924,072
			123.1	Pendleton Pike (US36/SR67)	Oaklandon Rd. to MAR/HAN Co Line	W 2-In. to 4-In. div.	State	\$ 9,291,776
			141	State Rd. 37	0.45 mi S of Epler Ave. to Thompson Rd.	W 4-In. div. to 6-In. div.	State	\$ 7,500,000
			141.1	State Rd. 37	Epler Ave. to Edgewood Rd.	W 4-In. div. to 6-In. div.	State	\$ 6,900,000
			154	Washington St. (US 40)	Franklin Rd. to Grassy Creek (1.57 mi W of MAR/HAN Co Line)	W 4-In. div. to 6-In. div.	State	\$ 7,000,000
			201	I-465 (West)	West 86th St.	Int.Mod., W 6-In. to 10-In.	State	\$ 23,000,000
			210	I-465 (West)	West 71st St.	Int. Mod.	State	\$ 5,100,000
				I-465 (North)	Allisonville Road to I-69	W 8-In div to 10-In div	State	\$ -
	75 <sup>th</sup> Street	Allisonville Road to Shadeland Avenue	W 2-In to 4-In	State	\$ -			

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
MAR	INDOT	2011-2020	47.1	Brookville Rd. (US52)	I-465 to Franklin Rd.	W 4-ln. to 6-ln. div.	State	\$ 2,304,105
			47.2	Brookville Rd. (US52)	Franklin Rd. to Post Rd. (94-IDT-1055)	W 2-ln. to 6-ln. div.	State	\$ 3,700,000
			47.4	Brookville Rd. (US52)	Post Rd. to MAR/HAN Co.Line	W 2-ln. to 4-ln.	State	\$ 36,760,000
			80.3	I-465(north/east)	East of US 31 to .43 km north of Fall Cr.	W 6-ln. div. to 10-ln. div.	State	\$ 4,448,032
			81	I-465	E of SR431 to E of US31	W 6-ln. div. to 10-ln. div.	State	\$ 3,940,340
			82	I-465	W of US 31 to US 421 + US 421 I-change	W 6-ln. div. to 10-ln. div.	State	\$ 5,134,677
			84	I-465 (West)	34th St. to I-65	W to 10-ln., mod. interch.	State	\$ 7,651,445
			88.1	I-65	Raymond St to I-70 South Split	W to 10-ln.	State	\$ 3,530,757
			93	I-69	0.5 mi S of I-465 to 0.5 mi S of 96th St + 2 int. at I-465 & at 86th St.	W 8-ln. div. to 12-ln. div.	State	\$ -
			95	I-70	Interchange at German Church Rd.	Add Diamond Interchange	State	\$ 106,890,000
			97	I-74	Widen Post Rd. over I-74	W Post and adjust ramps	State	\$ 12,000,000
			98	Kentucky Ave. (SR 67)	I-465 to Thompson Rd.	W 4-ln. div. to 6-ln. div.	State	\$ 9,975,586
			128.1	Rockville Rd. (US 36)	Marion/Hendricks Co Line to I-465	W 5-ln. to 6-ln. div.	State	\$ 70,000,000
			369.1	I-69	I-465 to MAR/JO Co Line	Add new 8-ln. freeway	State	\$ 90,700,000
			613	I-70	I-65 north split to I-465 east leg	Add 1 ln. in each direction	State	\$ 226,308,748
			616	I-65/I-70 inner loop east	North Split to south split	Add 1 ln. in each direction	State	\$ 8,000,000
			617.1	I-70	E. of Post Rd. to MAR/HAN Co Line	W 4-ln. div. to 6-ln. div.	State	\$ 2,398,708
			618	I-65	.5 mi S. of Co. Ln Rd. to .5 mi S. of Southport Rd.		State	\$ 23,370,000
		619	I-65	I-465 South to Southport Rd.	W 6-ln. div. to 8-ln. div.	State	\$ 95,320,250	
		674	I-74	I-465 to north-south corridor	W 4-ln. div. to 6-ln. div.	State	\$ 47,200,000	
		624	I-70	I-70 South split to Airport Expressway	W 6-ln. div. to 8-ln. div.	State	\$ 7,722,983	
		622	I-465	0.5 mi N of 86th St (West Leg) to US 421	W 6-ln. div. to 10-ln. div.	State	\$ 4,000,000	
		2021-2030	88.2	I-65	Raymond St. to I 465 South	W to 8-ln.	State	\$ 10,298,042
		94.2	I-70 (west)	Six Points to I-465	W 10-ln. to 14-ln. div.	State	\$ 12,507,707	
		614	I-65	I-70 north split to 38th St.	Add 1 ln. in each direction	State	\$ 2,007,831	
		623	I-465	I-65 South to US 40	W 6-ln. div. to 10-ln. div.	State	\$ 1,745,070	
625	I-465	1.3 km E of SR 67 to I-65 South	W 6-ln. div. to 10-ln. div.	State	\$ 75,000,000			



Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
MAR	DPW	2006-2010	47.3	Brookville Rd.	Arlington Ave. to Hunter Rd.	W 2-In. to 4-In. div.	Urban	\$ 15,660,000
			59.2	Franklin Rd.	42nd to 38th	W 2-In. to 4-In. div.	Urban	\$ 1,000,000
			65	Georgetown Rd.	56th St. to Lafayette Rd.	W 2-In. to 4-In. div.	Urban	\$ 54,000,000
			75.2	Harding St.	Raymond St. to Hanna Ave.	W 2-In. to 4-In. div.	Urban	\$ 650,000
			129.2	Shadeland Ave.	42nd St. to Pendleton Pike	W 2-In. to 4-In. div.	Urban	\$ 3,214,643
			131	Shadeland Ave.	38th St. to Rail Rd. N. of I-70	W 4-In. div. to 6-In. div.	Urban	\$ 64,003,339
			132	Six-Points-Camby Rd.	I-70 at Six Points to SR 67/ Ky. Ave.	New 4-In. div.	Special	\$ 61,500,000
			602	Michigan Rd.	38th St. to 42nd St.	W 2-In. to 4-In. div.	Urban	\$ 6,600,000
			670	I-65 and I-70	Market Street Ramp	Interchange Mod.	Special	\$ 12,360,000
		699	East St.	Mills Ave. to Southern Ave.	W 6-In. to 7-In. div.	Urban	\$ 6,200,000	
		2011-2020	2	10th St.	Raceway Rd. to Tomahawk.	Reconst./W to 4-In. div.	Urban	\$ 3,282,501
		601	21st St.	Post Rd. to Mithoefer	W 2-In. to 4-In. div.	Urban	\$ 3,898,544	
		24	56th St.	Raceway Rd. to Dandy Trail Rd.	W 2-In. to 4-In. div.	Urban	\$ 69,728,449	
		25	56th St.	Dandy Trail Rd. to I-465	W 2-In. to 4-In. div.	Urban	\$ 3,615,716	
		27.1	79th St.	Fall Creek Rd. to Sunnyside Rd.	W 2-In. to 4-In. div.	Urban	\$ 5,149,021	
		28	79th St.	Georgetown Rd. to Michigan Rd.	W 2-In. to 4-In. div.	Urban	\$ 2,464,174	
		29	79th St.	Michigan Rd. to Township Line Rd.	W 2-In. to 4-In. div.	Urban	\$ 5,527,617	
		31	82nd St.	Hague Rd. to Fall Creek Rd.	W 2-In. to 4-In. div.	Urban	\$ 165,000,000	
		41	Allisonville Rd.	96th St. to 86th	W 4-In. div. to 6-In. div.	Urban	\$ 15,305,678	
		42	Allisonville Rd.	82nd St. to Kessler Blvd.	W 2-In. to 4-In. div.	Urban	\$ 5,000,000	
		43	Allisonville Rd.	Kessler Blvd. to Fall Creek Pkwy	W 2-In. to 4-In. div.	Urban	\$ 4,409,000	
		49.2	Cooper Rd.	Michigan Rd. to 62nd St.	New 2-In. on 4-In. div. ROW	Urban	\$ 4,109,000	
		53	Dandy Trail Rd.	Crawfordsville Rd. to 34th St.	W 2-In. to 4-In. div.	Urban	\$ 44,400,000	
		54.2	Emerson Ave.	Shelbyville Rd. to Southport Rd.	W 2-In. to 4-In. div.	Urban	\$ 7,338,874	
		63	Georgetown Rd.	86th St. to 62nd St.	W 2-In. to 4-In. div.	Urban	\$ 11,217,510	
		64	Georgetown Rd.	62nd St. to 56th St.	W 2-In. to 4-In. div.	Urban	\$ 3,725,317	
		102.2	Lynhurst	Bradbury to Rockville Rd.	W 2-In. to 4-In. div.	Urban	\$ 10,150,927	
		150	Thompson Rd.	High School Rd. to Mann Rd.	W 2-In. to 4-In. div.	Urban	\$ 7,576,416	
		152.1	Township Line Rd.	96th St. to 79th St.	W 2-In. to 4-In. div.	Urban	\$ 45,000,000	
		152.2	Township Line Rd.	79th St. to 71st St. (WestLane Rd.)	New 4-In. div. Roadway	Urban	\$ 36,000,000	
		160	Zionsville Rd.	96th St. to 86th St.	W 2-In. to 4-In. div.	Urban	\$ 5,636,075	
		606	75th St.	Shadeland to SR 37	W 2-In. to 4-In. div.	Urban	\$ 47,000,000	
607	56th St.	Guion Rd. to Kessler	W 2-In. to 4-In. div.	Urban	\$ 36,000,000			
608	71st St.	Georgetown Rd. to Michigan Rd.	W 2-In. to 4-In. div.	Urban	\$ 3,000,000			

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
MAR	DPW	2021-2030	44	Bluff Rd.	Thompson Rd. to SR 37	W 2-ln. to 4-ln. div.	Urban	\$ 14,216,446
			45	Bluff Rd.	West St. to Troy Ave.	W 2-ln. to 4-ln. div.	Urban	\$ 2,951,600
			49.1	Camby Rd Extension	Mooreville Rd. to Mann Rd.	New 2 ln. on 4-ln. div. ROW	Urban	\$ 4,000,000
			50	County Line Rd.	SR 37 to Morgantown Rd.	W 2-ln. to 4-ln. div.	Urban	\$ 914,728
			54.1	Emerson Ave.	I-465 to Thompson Rd.	W 4-ln. to 6-ln. div.	Urban	\$ 2,430,584
			56	Fall Creek Rd.	Hague Rd. to I-465 (Shadeland )	W 2-ln. to 4-ln. div.	Urban	\$ 3,848,157
			60.1	Franklin Rd.	Brookville Rd. (US 52) to Troy Ave.	W 2-ln. to 4-ln. div.	Urban	\$ 2,133,166
			67	Girls School Rd.	Rockville Rd. to 21st St.	W 2-ln. to 4-ln. div.	Urban	\$ 7,555,085
			100	Kessler Blvd.	Fall Creek Pkwy to SR 37	W 36ft. to 4-ln. div.	Urban	\$ 24,415,000
			104	Mann Rd.	Kentucky Rd. to Southport Rd.	W 2-ln. to 4-ln. div.	Urban	\$ 47,200,000
			125	Post Rd.	Brookville Rd. (US 52) to I-74	W 2-ln. to 4-ln. div.	Urban	\$ 1,955,997
			127	Rockville Rd.	Lynhurst Drive to Washington St.	W 2-ln. to 4-ln. div.	Urban	\$ 13,160,529
			134	Southport Rd.	Mann Rd. to SR 37	W 2-ln. to 4-ln. div.	Urban	\$ 7,870,646
			135.2	Southport Rd.	Bluff to Meridian Rd. (SR 135)	W 2-ln. to 4-ln. div.	Urban	\$ 4,058,694
			136	Southport Rd.	Meridian Rd. (SR 135) to East (US 31)	W 2-ln. to 4-ln. div.	Urban	\$ 5,887,725
			137	Southport Rd.	Emerson Ave. to Franklin Rd.	W 2-ln. to 4-ln. div.	Urban	\$ 75,000,000
			149	Thompson Rd.	Kentucky Ave. to High School Rd.	New 4-ln. div.	Urban	\$ 49,000,000
			156	West St.	Raymond St. to Bluff Rd.	W 2-ln. to 4-ln. div.	Urban	\$ 160,000,000
			802	10th St.	I-465 to Country Club Rd.	W 4-ln. to 6-ln. div.	Urban	\$ 3,496,198
				IndyGo	2006-2010	915	Intermodal Facility	Children's Museum
	916	Multimodal Facility	Ivy Tech State College				Special	\$ -
	LAW	2006-2010	600	Lee Rd.	Otis Ave. to 71st St.	W 2-ln. to 4-ln. div.	Urban	\$ 13,900,000

Co	Agency	Funding Period	MPO ID#	Facility	Location	Project Description	Funding Type	Amount
SHE	Shl'ville	2006-2010	N/A	Progress Parkway	Town of Shelbyville	New 2, 4-lane Roadway	Special	\$ -

**2030 Long Range Transportation Plan - Expansion Projects**

#	Location	Between	Improvement	Type	Fun. Class	ADT	Juris	Estimated Construction Costs			Open to Traffic
								2002-2010	2011-2020	2021-2030	
1	SR 9	I-69 Exit # 22 & Fall Creek Bridge	Median Construction	Exp	PA	32,400	INDOT	\$8,563,000			2009
2	SR 13	CR 700 S. & Madison/Hancock Line	Add Travel Lanes	Exp	MA	8,500	INDOT		\$10,000,000		2012
3	US 36	Fall Creek Bridge & SR 9 S. Junction	Added Travel Lanes	Exp	PA	12,000	INDOT	\$11,000,000			2010
4	SR 37	CR 400 N. & CR 1300 N.	Add Travel Lanes	Exp	PA	10,900	INDOT			\$18,000,000	2025
5	SR 38	East of I-69 & Hamilton County Line	Added Travel Lanes	Exp	RA	8,400	INDOT			\$7,500,000	2021
6	SR 38	SR 67 & I-69/Pendleton By-Pass	New Road Construction	Exp	COLL	12,000	City		\$25,000,000		2016
7	I-69	Exit #34 at SR 67, Daleville	Interchange Modification	Exp	INT	42,500	INDOT	\$5,000,000			2009
8	I-69	SR 238 & SR 9/SR 67	Added Travel Lanes	Exp	INT	45,200	INDOT		\$70,000,000		2010
9	I-69	SR 9/SR 67 & SR 67/SR 32	Added Travel Lanes	Exp	INT	46,800	INDOT		\$70,000,000		2014
10	38th St.	SR 9 & Rangeline Rd.	Add Travel Lanes/Sidewalks	Exp	MA	12,500	City	\$1,250,000			2008
11	53rd St.	Columbus & Pendleton Ave.	Add Travel Lanes	Exp	PA	15,800	City		\$5,000,000		2011
12	Columbus Ave.	60th & 67th Streets.	Added Travel Lanes	Exp	MA	8,500	City		\$1,000,000		2015
13	E. Enterprise Drive	Exit #22 & SR 236/53rd Street	New Road Construction	Exp	COLL	20,000	City		\$20,000,000		2010
14	E. Enterprise Drive	E. 59th St. Rotary & CR 200 E.	New Road Construction	Exp	COLL	20,000	City		\$2,000,000		2010
15	W. Enterprise Drive	CR 400 W. & SR 38	New Road Construction	Exp	COLL	10,000	City/Cnty		\$12,000,000		2015
16	W. Enterprise Drive	SR 38 & CR 650 W.	New Road Construction	Exp	COLL	10,000	City/Cnty		\$5,000,000		2018
17	Madison Ave.	29th & 53rd Streets	Added Travel Lanes	Exp	MA	14,500	City	\$5,000,000			2008
18	Madison Ave.	53rd St. & Corporate Limits	Added Travel Lanes	Exp	MA	12,500	City		\$1,500,000		2011
19	Madison Ave.	Van Buskirk & Cross St.	Added Travel Lanes	Exp	MA	12,500	City			\$3,000,000	2021
20	Main St.	38th & 46th Streets.	Add Travel Lanes	Exp	MA	12,500	City	\$1,500,000			2008
21	Pendleton Ave.	W. 25th & 46th Streets	Added Travel Lanes	Exp	PA	14,500	City	\$3,500,000			2007
22	Raible Ave.	W. 29th & 38th Streets	Add Travel Lanes	Exp	PA	8,500	City		\$750,000		2011
23	Raible Ave.	North Shore & Cross St.	Add Travel Lanes	Exp	PA	8,400	City			\$1,750,000	2021
24	Rangeline Rd./CR 200 E.	SR 236 & CR 400 S.	Added Travel Lanes/Intersection Imp.	Exp	MA	9,500	City/Cnty		\$1,800,000		2012
25	Rangeline Rd./CR 200 E.	CR 400 S. & CR 500 S.	Added Travel Lanes	Exp	MA	5,000	City/Cnty			\$1,800,000	2021
26	CR 400 South	Ridgeview Dr. & CR 400 W.	Added Travel Lanes	Exp	COLL	5,000	City	\$3,500,000			2009
27	CR 450 S./73rd St.	CR 350 W. & CR 400 W.	New Road Construction	Exp	COLL	5,000	City	\$1,500,000			2009

## APPENDIX B: MODELING SYSTEM

This report provides an overview of the EMIS procedure developed for the Indianapolis Metropolitan Planning Organization for use with MOBILE 6.2, an air quality modeling program mandated by the U.S. Environmental Protection Agency.

### Emission Calculations

The EMIS air quality program estimates daily mobile source emissions for Direct PM 2.5, exhaust NO<sub>x</sub>, and other precursors and pollutants (VOC, exhaust CO, and ammonia). This is now done separately for four seasons due to the need to convert daily PM 2.5 emissions estimates to annual estimates. EMIS also reports vehicle miles of travel (VMT) and vehicle hours of travel (VHT). Summaries are provided for all nine counties in the modeling area, and presented by HPMS code, area type and facility type.

EMIS reads daily VMT and average speeds from the travel model, and emission factors from the output of MOBILE 6.2. Emissions are calculated for each highway link using a “*link-based speed*” method, which involves multiplying the VMT (link length in miles X daily vehicles) by the emission factor in grams per vehicle mile, for the estimated speed reported from the travel model. Reading the vehicle trip table and estimating the intrazonal travel distance from the intrazonal travel time and the centroid connector speeds accounts for intrazonal travel. Separate sets of emissions factors are used for freeways, ramps, arterials and intrazonal/centroid connectors. EMIS then accumulates emissions by county, area type and facility type. An example of the EMIS output is provided in Appendix A.

### Emission Factors

MOBILE 6.2 is used to generate a lookup table of emission factors for arterial and freeway links in 5 mph speed increments, as well as emission rates for ramps and locals, and then emissions are calculated on a link-by-link basis. This involves using the AVERAGE SPEED command for freeways and arterials, and the VMT BY FACILITY command for centroid connectors and intrazonal trips, as described in *User’s Guide to MOBILE6.1 and MOBILE6.2*<sup>3</sup>.

The AVERAGE SPEED command is used to determine the emission factors for all travel on two types of facilities:

- Non-ramp Freeway- All VMT occurs on freeways, excluding freeway ramps
- Arterial - All VMT occurs on arterial/collector roadways

For each modeling year, unique emissions factors are derived for each freeway and arterial link based on estimated speed and facility type. Scenario records are generated beginning at 3.0 mph, then at 5.0 mph and increasing in 5 mph increments to 65.0 mph using the “AVERAGE SPEED” command. Each of the resulting 28 scenarios generates emission factors for Direct PM 2.5, NO<sub>x</sub>, and other precursors for the specified speed range and type of facility.

VMT BY FACILITY is used to generate emission factors for centroid connectors, intrazonal trips and freeway ramps. The centroid/intrazonal scenario uses a custom input file that specifies that all VMT occurs on local roads for all possible vehicle types. Similarly, the ramp scenario uses a custom input file that specifies that all VMT occurs on ramps for all possible vehicle types. This method does not require an estimate of average speed.

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<sup>3</sup> User’s Guide to Mobile 6.1 and 6.2. U.S. Environmental Protection Agency. EPA420-R-02-028. October 2002.

- Centroid connectors represent the local roads that lead from driveways and parking lots to roadways that are significant enough to appear in the network. So, while the connectors are idealized, the travel is real and the roadway type is “local.”
- Intrazonal trips are trips that begin and end in the same TAZ without leaving that TAZ. Obviously they begin and end at different physical locations, but the detail of the trip is finer than the detail of the model. Nevertheless, the model assumes that these trips have an average distance, and that distance is one-half the distance from the zone centroid to the nearest centroid outside the zone (standard practice). It is generally held that most trips beginning and ending in the same TAZ travel on local roads.

A Fortran program called *m6in.exe* generates the required MOBILE 6.2 input files (see Appendix C). For PM 2.5 modeling, unique input files are generated for each of the four seasons. The process also uses a regional vehicle age distribution (Appendix G) to estimate change in the vehicle mix over time. EMIS reads the MOBILE 6.2 output files (Appendix D) to retrieve the emission factors used in the calculations. The factors for modeled speeds are interpolated between the five-mile per hour increments reported by MOBILE 6.2 to match the floating-point decimal speed reported by the travel model for each roadway link. The speed on each link is a function of the initial free-flow speed for the link as determined in model calibration, and the congested speed resulting from the model’s capacity-restrained assignment process. EMIS calculates mobile source emissions (grams of PM 2.5, exhaust NOx, and others) for each link and accumulates these values for reporting (Appendix E).

### Model Application

EMIS must be run from the Indianapolis Model TransCAD interface. Before EMIS can be run, a complete model application must have been run, and the resulting loads must have been attached to the network database using the "Get Hwy Loads..." menu selection. Then, "Run EMIS..." will run MOBILE 6.2, *m6in*, and EMIS. The report files, called EMIS.jul, EMIS.jlm, EMIS.wnt, EMIS.spr, EMIS.smr, and EMIS.atm, will be created in the current modeling folder<sup>4</sup>. If you have correctly setup the latest version of the Indianapolis modeling system, all required files would be present in the C:\I98 folder. Nevertheless, new and modified files required for the model are:

1) C:\I98\m6in.exe –	12/14/2005
2) C:\I98\MOBILE6.IN	11/10/2005
3) C:\I98\IEMIS.BAT –	01/24/2006
4) C:\I98\INDYEMIS.EXE –	09/30/2005
5) C:\I98\MOBILE62.EXE –	12/13/2002
6) C:\I98\ibox\IBOX.1 ... 6 and DBD –	06/28/2004
7) C:\I98\fvmt.def –	10/18/2004
8) C:\I98\rmpvmt.def –	02/06/2005
9) IN_grp3.d –	08/26/2004
10) IN_grpPM.d –	12/14/2005

EMIS automatically applies the emission factors output from the MOBILE 6.2 model to the VMT projections derived from the Indianapolis Travel Demand Model. However, the emissions factors are a stand-alone output, and can be manually applied to travel demand model outputs. For more information on the Indianapolis Travel Demand Model, see Chapters 3 and 4 in the Indianapolis 2030 Regional Transportation Plan Update approved in June 2005.

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<sup>4</sup> EMIS.jul reports emissions forecasts for the 8-hour ozone standard based on climate inputs for a typical July day in Central Indiana. EMIS.jlm reports emissions forecasts for the 1-hour ozone standard based on temperature inputs consistent with those used to develop the 1-hour ozone SIP. EMIS.wnt, EMIS.spr, EMIS.smr, and EMIS.atm are used for PM 2.5 emissions analysis, and report seasonal emissions forecasts based on climate inputs representing an average day in each season.

## APPENDIX C: AIR QUALITY CONFORMITY CONSULTATION GROUP

Meetings and discussions to guide the Air Quality Conformity Process for the 9-County Ozone nonattainment area and the 5-County PM 2.5 nonattainment area have taken place since September 2004. The following agencies and individuals have been instrumental in reviewing the processes and procedures used to demonstrate Air Quality Conformity.

Federal Highway Administration  
Joyce Newland

Federal Transit Administration Region 5  
Victor Austin

Indiana Dept. of Environmental Management- Office of Air Quality  
Laurence Brown  
Brian Callahan

U.S. Environmental Protection Agency Region 5  
Patricia Morris

City of Indpls Dept. of Public Works- Office of Environmental Services  
Felicia Robinson

Indianapolis Public Transportation Corporation / IndyGo  
Mike Terry

Staff members representing the jurisdictions within or partially within the 5-County nonattainment area are:

Madison County Council of Governments (Anderson MPO)  
Jerrold Bridges, Director  
Bruce Burnett, Senior Transportation Planner  
Peter Mitchell, Chief Transportation Specialist

Indianapolis MPO  
Philip Roth, Assistant Manager  
Sweson Yang, Chief Planner

Columbus MPO  
Kent Anderson, Director

Indiana Department of Transportation  
Dan Buck, Planner

# APPENDIX D: MOBILE 6.2 INPUT RECORD

Indianapolis Air Quality Analysis: 2030 Plan RUN DATA	EVALUATION MONTH : 7	EVALUATION MONTH : 7
NO	SCENARIO : ~45.0 NON-	SCENARIO : ~30.0
REFUELING :	RECORD RAMP	RECORD ARTERIAL
EXPRESS HC AS VOC :	AVERAGE SPEED : 45.0 NON-RAMP	AVERAGE SPEED : 30.0
MIN/MAX TEMP : 65.5	CALENDAR YEAR : 2000	ARTERIAL CALENDAR YEAR :
85.5* ABSOLUTE HUMIDITY :	EVALUATION MONTH : 7	2000 EVALUATION MONTH : 7
87.3		
CLOUD COVER : 0.34		SCENARIO RECORD : ~35.0
SUNRISE/SUNSET : 6 8	SCENARIO RECORD : ~50.0 NON-	ARTERIAL AVERAGE SPEED :
REG DIST :	RAMP AVERAGE SPEED : 50.0	35.0 ARTERIAL CALENDAR
c:\I98\IN_grp3.d FUEL RVP	NON-RAMP CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
: 9.0	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~ 3.0		SCENARIO RECORD : ~40.0
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~55.0 NON-	ARTERIAL AVERAGE SPEED :
3.0 NON-RAMP CALENDAR YEAR	RAMP AVERAGE SPEED : 55.0	40.0 ARTERIAL CALENDAR
: 2000 EVALUATION MONTH :	NON-RAMP CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~ 5.0		SCENARIO RECORD : ~45.0
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~60.0 NON-	ARTERIAL AVERAGE SPEED :
5.0 NON-RAMP CALENDAR YEAR	RAMP AVERAGE SPEED : 60.0	45.0 ARTERIAL CALENDAR
: 2000 EVALUATION MONTH :	NON-RAMP CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~10.0		SCENARIO RECORD : ~50.0
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~65.0 NON-	ARTERIAL AVERAGE SPEED :
10.0 NON-RAMP CALENDAR	RAMP AVERAGE SPEED : 65.0	50.0 ARTERIAL CALENDAR
YEAR : 2000 EVALUATION	NON-RAMP CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
MONTH : 7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~15.0		SCENARIO RECORD : ~55.0
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~ 3.0	ARTERIAL AVERAGE SPEED :
15.0 NON-RAMP CALENDAR	ARTERIAL AVERAGE SPEED : 3.0	55.0 ARTERIAL CALENDAR
YEAR : 2000 EVALUATION	ARTERIAL CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
MONTH : 7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~20.0		SCENARIO RECORD : ~60.0
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~ 5.0	ARTERIAL AVERAGE SPEED :
20.0 NON-RAMP CALENDAR	ARTERIAL AVERAGE SPEED : 5.0	60.0 ARTERIAL CALENDAR
YEAR : 2000 EVALUATION	ARTERIAL CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
MONTH : 7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~25.0		SCENARIO RECORD : ~65.0
NONRAMP AVERAGE SPEED :	SCENARIO RECORD : ~10.0	ARTERIAL AVERAGE SPEED :
25.0 NONRAMP CALENDAR YEAR	ARTERIAL AVERAGE SPEED : 10.0	65.0 ARTERIAL CALENDAR
: 2000 EVALUATION MONTH :	ARTERIAL CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~30.0		SCENARIO RECORD : ~VMT BY
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~15.0	FACILITY VMT BY FACILITY
30.0 NON-RAMP CALENDAR	ARTERIAL AVERAGE SPEED : 15.0	: c:\I98\fvmt.def CALENDAR
YEAR : 2000 EVALUATION	ARTERIAL CALENDAR YEAR : 2000	YEAR : 2000 EVALUATION
MONTH : 7	EVALUATION MONTH : 7	MONTH : 7
SCENARIO RECORD : ~35.0		SCENARIO RECORD : ~VMT BY
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~20.0	FACILITY VMT BY FACILITY
35.0 NON-RAMP CALENDAR	ARTERIAL AVERAGE SPEED : 20.0	: c:\I98\rmpvmt.def
YEAR : 2000 EVALUATION	ARTERIAL CALENDAR YEAR : 2000	CALENDAR YEAR : 2000
MONTH : 7	EVALUATION MONTH : 7	EVALUATION MONTH : 7 END
SCENARIO RECORD : ~40.0		OF RUN
NON-RAMP AVERAGE SPEED :	SCENARIO RECORD : ~25.0	
40.0 NON-RAMP CALENDAR	ARTERIAL AVERAGE SPEED : 25.0	
YEAR : 2000	ARTERIAL CALENDAR YEAR : 2000	

# APPENDIX E: SAMPLE MOBILE 6.2 OUTPUT

INDIANAPOLIS REGIONAL TRAVEL DEMAND MODEL --  
 EMISSION MODEL FOR MOBILE 6.2 -- PROGRAM DATE: 12NOV2004  
 - RUN TIME: 07:30:58 29NOV06

\*\* EMISSION FACTORS FROM MOBILE 6.2

Road Class	Speed	HC	CO	NOx	PM	NH3
Freeway	3	9.5910	47.1880	4.2150	0.0510	0.0914
Freeway	5	4.7970	32.6490	3.9200	0.0510	0.0914
Freeway	10	2.5920	20.8960	3.1260	0.0510	0.0914
Freeway	15	1.9610	17.4310	2.7000	0.0510	0.0914
Freeway	20	1.6690	16.4010	2.5990	0.0509	0.0914
Freeway	25	1.5310	15.8970	2.5360	0.0505	0.0914
Freeway	30	1.4370	15.6120	2.5050	0.0500	0.0914
Freeway	35	1.3530	15.7200	2.5000	0.0496	0.0914
Freeway	40	1.3040	16.4150	2.5400	0.0496	0.0914
Freeway	45	1.2620	17.1580	2.6180	0.0496	0.0914
Freeway	50	1.2250	17.9450	2.7350	0.0496	0.0914
Freeway	55	1.1930	18.7780	2.9040	0.0496	0.0914
Freeway	60	1.1690	19.7080	3.1400	0.0496	0.0914
Freeway	65	1.1500	20.7160	3.4730	0.0496	0.0914
Arterial	3	9.5920	47.1880	3.9490	0.0510	0.0914
Arterial	5	4.7970	32.6490	3.6540	0.0510	0.0914
Arterial	10	2.6860	21.9790	3.0610	0.0510	0.0914
Arterial	15	2.0740	18.6940	2.6820	0.0510	0.0914
Arterial	20	1.7210	16.8840	2.4640	0.0509	0.0914
Arterial	25	1.5480	16.0070	2.3320	0.0505	0.0914
Arterial	30	1.4400	15.6320	2.2560	0.0500	0.0914
Arterial	35	1.3530	15.7200	2.2340	0.0496	0.0914
Arterial	40	1.3040	16.4150	2.2740	0.0496	0.0914
Arterial	45	1.2620	17.1580	2.3520	0.0496	0.0914
Arterial	50	1.2250	17.9450	2.4690	0.0496	0.0914
Arterial	55	1.1930	18.7780	2.6370	0.0496	0.0914
Arterial	60	1.1690	19.7080	2.8740	0.0496	0.0914
Arterial	65	1.1500	20.7160	3.2060	0.0496	0.0914
Local	1	2.2010	15.8440	2.3050	0.0510	0.0914
Ramps	1	1.5670	24.7730	2.3030	0.0496	0.0914

INDIANAPOLIS REGIONAL TRAVEL DEMAND MODEL --  
 EMISSION MODEL FOR MOBILE 6.2 -- PROGRAM DATE: 12NOV2004  
 - RUN TIME: 07:30:58 29NOV06

EMISSIONS IN KILOGRAMS PER DAY

+++ ALTERNATIVE IS:02A

MOBILE6 INPUT FILE :

-----  
 Marion County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	290.	4934.	790.	12.	23.
OTH. PRINC. ART.( 2)	110.	791.	93.	1.	2.
MINOR ARTERIAL ( 6)	265.	2795.	379.	8.	14.
CENCON & INTRAS ( 9)	20.	146.	21.	0.	1.
SUBTOTAL	686.	8666.	1283.	22.	40.
-----URBAN-----					
INTERSTATE (11)	12596.	187738.	28891.	507.	933.
OTH.FWY & XWAY (12)	804.	10002.	1401.	30.	55.
OTH. PRINC. ART.(14)	8816.	102660.	14364.	310.	570.
MINOR ARTERIAL (16)	8854.	103929.	14662.	320.	589.
CENCON & INTRAS (19)	4353.	31337.	4559.	101.	181.
SUBTOTAL	35422.	435667.	63877.	1268.	2327.
---TOTAL---	36108.	444333.	65160.	1290.	2367.



(TONS) 39.77 489.35 71.76 1.42 2.61

DAILY TRAVEL STATS

-----  
Marion County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	248055.	4181.	59.33
OTH. PRINC. ART.( 2)	27311.	4189.	6.52
MINOR ARTERIAL ( 6)	152982.	6928.	22.08
CENCON & INTRAS ( 9)	9223.	461.	20.00
SUBTOTAL	437571.	15759.	27.77
-----URBAN-----			
INTERSTATE (11)	10212290.	212305.	48.10
OTH.FWY & XWAY (12)	601068.	16207.	37.09
OTH. PRINC. ART.(14)	6234334.	193454.	32.23
MINOR ARTERIAL (16)	6442257.	190013.	33.90
CENCON & INTRAS (19)	1977841.	131810.	15.01
SUBTOTAL	25467788.	743787.	34.24
TOTAL	25905352.	759546.	34.11

-----  
Hamilton County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	456.	7395.	1159.	19.	35.
OTH. PRINC. ART.( 2)	980.	13435.	1845.	39.	71.
MINOR ARTERIAL ( 6)	275.	3460.	480.	10.	19.
CENCON & INTRAS ( 9)	453.	3259.	474.	10.	19.
SUBTOTAL	2165.	27550.	3957.	79.	145.
-----URBAN-----					
INTERSTATE (11)	859.	12082.	1866.	34.	63.
OTH.FWY & XWAY (12)	1257.	14987.	2108.	46.	84.
OTH. PRINC. ART.(14)	1364.	15860.	2224.	48.	88.
MINOR ARTERIAL (16)	1543.	18467.	2595.	57.	104.
CENCON & INTRAS (19)	1156.	8320.	1210.	27.	48.
SUBTOTAL	6179.	69716.	10004.	211.	387.
---TOTAL---	8343.	97266.	13961.	290.	531.
(TONS)	9.19	107.12	15.38	0.32	0.59

DAILY TRAVEL STATS

-----  
Hamilton County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	385721.	6753.	57.12
OTH. PRINC. ART.( 2)	779011.	17137.	45.46
MINOR ARTERIAL ( 6)	210886.	5282.	39.93
CENCON & INTRAS ( 9)	205724.	10286.	20.00
SUBTOTAL	1581342.	39458.	40.08
-----URBAN-----			
INTERSTATE (11)	687499.	14823.	46.38
OTH.FWY & XWAY (12)	914757.	26588.	34.40
OTH. PRINC. ART.(14)	961449.	29214.	32.91
MINOR ARTERIAL (16)	1141437.	31887.	35.80
CENCON & INTRAS (19)	525137.	34427.	15.25
SUBTOTAL	4230278.	136939.	30.89
TOTAL	5811620.	176396.	32.95

-----  
 Johnson County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	726.	12141.	1928.	31.	57.
OTH. PRINC. ART.( 2)	882.	12527.	1735.	35.	65.
MINOR ARTERIAL ( 6)	169.	2473.	345.	7.	13.
CENCON & INTRAS ( 9)	440.	3169.	461.	10.	18.
SUBTOTAL	2217.	30309.	4468.	83.	152.
-----URBAN-----					
INTERSTATE (11)	481.	8070.	1287.	20.	38.
OTH.FWY & XWAY (12)	137.	2123.	297.	6.	10.
OTH. PRINC. ART.(14)	713.	9242.	1279.	27.	50.
MINOR ARTERIAL (16)	568.	7066.	987.	21.	39.
CENCON & INTRAS (19)	582.	4190.	610.	13.	24.
SUBTOTAL	2482.	30691.	4459.	88.	162.
---TOTAL---	4699.	61000.	8927.	171.	314.
(TONS)	5.17	67.18	9.83	0.19	0.35

DAILY TRAVEL STATS

-----  
 Johnson County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	619536.	10434.	59.38
OTH. PRINC. ART.( 2)	709648.	14956.	47.45
MINOR ARTERIAL ( 6)	137417.	2788.	49.29
CENCON & INTRAS ( 9)	199981.	9999.	20.00
SUBTOTAL	1666583.	38177.	43.65
-----URBAN-----			
INTERSTATE (11)	410738.	6891.	59.60
OTH.FWY & XWAY (12)	114325.	2127.	53.76
OTH. PRINC. ART.(14)	550842.	13387.	41.15
MINOR ARTERIAL (16)	430861.	11191.	38.50
CENCON & INTRAS (19)	264439.	17629.	15.00
SUBTOTAL	1771205.	51225.	34.58
TOTAL	3437786.	89402.	38.45

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 Hendricks County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	714.	12325.	2001.	30.	56.
OTH. PRINC. ART.( 2)	760.	10226.	1409.	30.	54.
MINOR ARTERIAL ( 6)	99.	1232.	171.	4.	7.
CENCON & INTRAS ( 9)	400.	2878.	419.	9.	17.
SUBTOTAL	1972.	26662.	4000.	73.	134.
-----URBAN-----					
INTERSTATE (11)	451.	7803.	1269.	19.	35.
OTH. PRINC. ART.(14)	812.	10432.	1447.	31.	57.
MINOR ARTERIAL (16)	433.	5402.	751.	16.	30.
CENCON & INTRAS (19)	356.	2565.	373.	8.	15.
SUBTOTAL	2052.	26201.	3840.	75.	138.
---TOTAL---	4024.	52863.	7840.	148.	272.
(TONS)	4.43	58.22	8.63	0.16	0.30

DAILY TRAVEL STATS

-----  
 Hendricks County

DAILY	DAILY	AVERAGE
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HPMS TYPE	VMT	VHT	SPEED
-----RURAL-----			
INTERSTATE ( 1)	614160.	9941.	61.78
OTH. PRINC. ART.( 2)	595091.	13744.	43.30
MINOR ARTERIAL ( 6)	75334.	1912.	39.39
CENCON & INTRAS ( 9)	181666.	9083.	20.00
SUBTOTAL	1466252.	34681.	42.28
-----URBAN-----			
INTERSTATE (11)	388301.	6272.	61.91
OTH. PRINC. ART.(14)	624892.	15372.	40.65
MINOR ARTERIAL (16)	330100.	8404.	39.28
CENCON & INTRAS (19)	161902.	10782.	15.02
SUBTOTAL	1505196.	40830.	36.86
TOTAL	2971450.	75511.	39.35

-----  
Hancock County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
OTH. PRINC. ART.( 2)	468.	6325.	870.	18.	34.
MINOR ARTERIAL ( 6)	96.	1209.	168.	4.	7.
CENCON & INTRAS ( 9)	238.	1716.	250.	6.	10.
SUBTOTAL	803.	9250.	1288.	28.	50.
-----URBAN-----					
INTERSTATE (11)	1196.	19614.	3107.	50.	93.
OTH. PRINC. ART.(14)	545.	7006.	969.	21.	38.
MINOR ARTERIAL (16)	347.	4339.	603.	13.	24.
CENCON & INTRAS (19)	320.	2303.	335.	7.	13.
SUBTOTAL	2408.	33262.	5014.	91.	168.
---TOTAL---	3211.	42513.	6302.	119.	219.
(TONS)	3.54	46.82	6.94	0.13	0.24

DAILY TRAVEL STATS

-----  
Hancock County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
OTH. PRINC. ART.( 2)	369802.	8348.	44.30
MINOR ARTERIAL ( 6)	73767.	1852.	39.83
CENCON & INTRAS ( 9)	108277.	5414.	20.00
SUBTOTAL	551847.	15614.	35.34
-----URBAN-----			
INTERSTATE (11)	1013264.	17533.	57.79
OTH. PRINC. ART.(14)	417360.	10392.	40.16
MINOR ARTERIAL (16)	263963.	6772.	38.98
CENCON & INTRAS (19)	145386.	9692.	15.00
SUBTOTAL	1839973.	44390.	41.45
TOTAL	2391821.	60003.	39.86

-----  
Shelby County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	890.	15273.	2469.	38.	70.
OTH. PRINC. ART.( 2)	468.	6341.	871.	18.	34.
MINOR ARTERIAL ( 6)	13.	167.	23.	0.	1.
CENCON & INTRAS ( 9)	299.	2153.	313.	7.	12.
SUBTOTAL	1669.	23933.	3676.	64.	117.
-----URBAN-----					

INTERSTATE (11)	441.	7632.	1241.	19.	35.
OTH. PRINC. ART.(14)	122.	1480.	208.	4.	8.
MINOR ARTERIAL (16)	38.	477.	66.	1.	3.
CENCON & INTRAS (19)	141.	1027.	149.	3.	6.
SUBTOTAL	742.	10616.	1664.	28.	51.
---TOTAL---	2411.	34549.	5340.	92.	168.
(TONS)	2.66	38.05	5.88	0.10	0.19

DAILY TRAVEL STATS

Shelby County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	764402.	12462.	61.34
OTH. PRINC. ART.( 2)	370249.	8282.	44.70
MINOR ARTERIAL ( 6)	9861.	235.	41.93
CENCON & INTRAS ( 9)	135863.	6793.	20.00
SUBTOTAL	1280376.	27772.	46.10
-----URBAN-----			
INTERSTATE (11)	379793.	6133.	61.92
OTH. PRINC. ART.(14)	89430.	2536.	35.27
MINOR ARTERIAL (16)	29014.	726.	39.96
CENCON & INTRAS (19)	64733.	4236.	15.28
SUBTOTAL	562970.	13631.	41.30
TOTAL	1843346.	41404.	44.52

Boone County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	1459.	23900.	3778.	61.	113.
OTH. PRINC. ART.( 2)	681.	9362.	1284.	27.	50.
MINOR ARTERIAL ( 6)	64.	812.	112.	2.	5.
CENCON & INTRAS ( 9)	384.	2767.	403.	9.	16.
SUBTOTAL	2590.	36842.	5578.	100.	183.
-----URBAN-----					
OTH. PRINC. ART.(14)	174.	2247.	310.	7.	12.
MINOR ARTERIAL (16)	70.	811.	115.	3.	5.
CENCON & INTRAS (19)	107.	768.	112.	2.	4.
SUBTOTAL	352.	3827.	537.	12.	21.
---TOTAL---	2941.	40669.	6115.	111.	204.
(TONS)	3.24	44.79	6.73	0.12	0.23

DAILY TRAVEL STATS

Boone County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	1236513.	21441.	57.67
OTH. PRINC. ART.( 2)	542162.	11877.	45.65
MINOR ARTERIAL ( 6)	49406.	1229.	40.21
CENCON & INTRAS ( 9)	174665.	8733.	20.00
SUBTOTAL	2002745.	43281.	46.27
-----URBAN-----			
OTH. PRINC. ART.(14)	134994.	3256.	41.46
MINOR ARTERIAL (16)	50332.	1556.	32.35
CENCON & INTRAS (19)	48502.	3233.	15.00
SUBTOTAL	333764.	9471.	35.24
TOTAL	2336510.	52751.	44.29

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Morgan County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	373.	6451.	1049.	16.	29.
OTH. PRINC. ART.( 2)	1555.	21846.	3038.	62.	114.
MINOR ARTERIAL ( 6)	110.	1379.	191.	4.	8.
CENCON & INTRAS ( 9)	514.	3701.	538.	12.	21.
SUBTOTAL	2552.	33377.	4817.	94.	172.
-----URBAN-----					
OTH. PRINC. ART.(14)	336.	4585.	647.	13.	24.
MINOR ARTERIAL (16)	39.	497.	69.	1.	3.
CENCON & INTRAS (19)	79.	572.	83.	2.	3.
SUBTOTAL	455.	5654.	799.	16.	30.
---TOTAL---	3007.	39032.	5616.	110.	202.
(TONS)	3.31	42.99	6.19	0.12	0.22

DAILY TRAVEL STATS

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Morgan County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	320953.	5182.	61.94
OTH. PRINC. ART.( 2)	1241825.	26945.	46.09
MINOR ARTERIAL ( 6)	84092.	2107.	39.91
CENCON & INTRAS ( 9)	233621.	11681.	20.00
SUBTOTAL	1880492.	45915.	40.96
-----URBAN-----			
OTH. PRINC. ART.(14)	258054.	5885.	43.85
MINOR ARTERIAL (16)	30152.	746.	40.40
CENCON & INTRAS (19)	36109.	2407.	15.00
SUBTOTAL	324315.	9039.	35.88
TOTAL	2204807.	54954.	40.12

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Madison County

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	907.	14938.	2363.	38.	70.
OTH. PRINC. ART.( 2)	1095.	14955.	2053.	43.	79.
MINOR ARTERIAL ( 6)	7.	91.	13.	0.	1.
CENCON & INTRAS ( 9)	626.	4626.	671.	15.	27.
SUBTOTAL	2634.	34610.	5099.	96.	177.
-----URBAN-----					
INTERSTATE (11)	224.	3796.	606.	10.	18.
OTH. PRINC. ART.(14)	1134.	14526.	2011.	43.	80.
CENCON & INTRAS (19)	525.	3782.	550.	12.	22.
SUBTOTAL	1883.	22104.	3168.	65.	119.
---TOTAL---	4517.	56714.	8267.	161.	296.
(TONS)	4.97	62.46	9.11	0.18	0.33

DAILY TRAVEL STATS

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Madison County

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	769973.	13222.	58.23

OTH. PRINC. ART.( 2)	868383.	19214.	45.20
MINOR ARTERIAL ( 6)	5505.	136.	40.36
CENCON & INTRAS ( 9)	290330.	14118.	20.56
SUBTOTAL	1934190.	46690.	41.43
-----URBAN-----			
INTERSTATE (11)	191742.	3170.	60.49
OTH. PRINC. ART.(14)	874064.	21398.	40.85
CENCON & INTRAS (19)	238699.	15913.	15.00
SUBTOTAL	1304506.	40481.	32.23
TOTAL	3238696.	87171.	37.15

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Total Model Area

HPMS TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
-----RURAL-----					
INTERSTATE ( 1)	5815.	97358.	15537.	246.	453.
OTH. PRINC. ART.( 2)	7000.	95807.	13197.	273.	503.
MINOR ARTERIAL ( 6)	1098.	13619.	1882.	40.	73.
CENCON & INTRAS ( 9)	3375.	24416.	3550.	78.	141.
SUBTOTAL	17288.	231200.	34166.	637.	1170.
-----URBAN-----					
INTERSTATE (11)	16247.	246734.	38267.	659.	1214.
OTH.FWY & XWAY (12)	2198.	27113.	3807.	81.	149.
OTH. PRINC. ART.(14)	14017.	168037.	23459.	505.	927.
MINOR ARTERIAL (16)	11893.	140989.	19848.	433.	797.
CENCON & INTRAS (19)	7619.	54865.	7982.	177.	316.
SUBTOTAL	51973.	637739.	93362.	1855.	3403.
---TOTAL---	69261.	868939.	127529.	2492.	4573.
(TONS)	76.28	956.98	140.45	2.74	5.04

DAILY TRAVEL STATS

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Total Model Area

HPMS TYPE	DAILY VMT	DAILY VHT	AVERAGE SPEED
-----RURAL-----			
INTERSTATE ( 1)	4959314.	83614.	59.31
OTH. PRINC. ART.( 2)	5503484.	124694.	44.14
MINOR ARTERIAL ( 6)	799252.	22470.	35.57
CENCON & INTRAS ( 9)	1539349.	76569.	20.10
SUBTOTAL	12801399.	307347.	41.65
-----URBAN-----			
INTERSTATE (11)	13383566.	268552.	49.84
OTH.FWY & XWAY (12)	1630150.	44922.	36.29
OTH. PRINC. ART.(14)	10145422.	294895.	34.40
MINOR ARTERIAL (16)	8718119.	251294.	34.69
CENCON & INTRAS (19)	3462749.	230131.	15.05
SUBTOTAL	37340080.	1089792.	34.26
TOTAL	50141528.	1397140.	35.89

INDIANAPOLIS REGIONAL TRAVEL DEMAND MODEL --  
EMISSION MODEL FOR MOBILE 6.2 -- PROGRAM DATE: 12NOV2004  
- RUN TIME: 07:30:58 29NOV06

EMISSIONS IN KILOGRAMS PER DAY  
+++ ALTERNATIVE IS:02A  
MOBILE6 INPUT FILE :

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Marion County

AREA TYPE	VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
CBD (1)	1764.	21877.	3170.	64.	117.
CDB FRINGE (2)	16713.	205276.	29954.	607.	1115.

RESIDENTIAL	(3)	16907.	207885.	30660.	596.	1092.
RURAL	(5)	724.	9294.	1377.	23.	43.
---TOTAL---		36108.	444333.	65160.	1290.	2367.
(TONS)		39.77	489.35	71.76	1.42	2.61

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Marion County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	12530.	187049.	29158.	508.	935.
EXPRESSWAY	(2)	786.	9769.	1369.	29.	54.
2-WAY ART w/prk	(3)	9115.	106676.	15035.	328.	602.
ONE-WAY ARTERIAL	(4)	966.	11401.	1608.	35.	65.
CENTROID CONNECT	(5)	4371.	31468.	4578.	101.	182.
2-WAY ART wo/prk	(6)	7985.	92345.	12889.	277.	509.
FREEWAY RAMPS	(7)	356.	5624.	523.	11.	21.
---TOTAL---		36108.	444333.	65160.	1290.	2367.
(TONS)		39.77	489.35	71.76	1.42	2.61

DAILY TRAVEL STATS  
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Marion County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
CBD	(1)	1278570.	37173.	34.39
CDB FRINGE	(2)	12202720.	346284.	35.24
RESIDENTIAL	(3)	11955264.	359778.	33.23
RURAL	(5)	468815.	16312.	28.74
TOTAL		25905352.	759546.	34.11

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Marion County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	10233330.	205392.	49.82
EXPRESSWAY	(2)	586970.	15862.	37.00
2-WAY ART w/prk	(3)	6592286.	196863.	33.49
ONE-WAY ARTERIAL	(4)	707732.	20303.	34.86
CENTROID CONNECT	(5)	1986123.	132240.	15.02
2-WAY ART wo/prk	(6)	5571902.	177794.	31.34
FREEWAY RAMPS	(7)	227011.	11094.	20.46
TOTAL		25905352.	759546.	34.11

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Hamilton County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
CDB FRINGE	(2)	444.	6055.	915.	17.	31.
RESIDENTIAL	(3)	5179.	57753.	8253.	176.	322.
SUBURBAN CBD	(4)	481.	5370.	757.	16.	30.
RURAL	(5)	2239.	28087.	4035.	80.	148.
---TOTAL---		8343.	97266.	13961.	290.	531.
(TONS)		9.19	107.12	15.38	0.32	0.59

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Hamilton County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1315.	19477.	3025.	53.	98.
EXPRESSWAY	(2)	1685.	20994.	2933.	63.	115.
2-WAY ART w/prk	(3)	1818.	21928.	3074.	67.	124.
ONE-WAY ARTERIAL	(4)	1.	18.	2.	0.	0.
CENTROID CONNECT	(5)	1683.	12117.	1763.	39.	70.

2-WAY ART wo/prk (6)	1840.	22733.	3163.	68.	124.
---TOTAL---	8343.	97266.	13961.	290.	531.
(TONS)	9.19	107.12	15.38	0.32	0.59

DAILY TRAVEL STATS

Hamilton County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
CDB FRINGE	(2)	343086.	8216.	41.76
RESIDENTIAL	(3)	3524398.	116204.	30.33
SUBURBAN CBD	(4)	328871.	10823.	30.39
RURAL	(5)	1615266.	41154.	39.25
TOTAL		5811620.	176396.	32.95

Hamilton County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1073220.	21575.	49.74
EXPRESSWAY	(2)	1258190.	33883.	37.13
2-WAY ART w/prk	(3)	1352323.	37168.	36.38
ONE-WAY ARTERIAL	(4)	1114.	31.	36.00
CENTROID CONNECT	(5)	764783.	46410.	16.48
2-WAY ART wo/prk	(6)	1361990.	37329.	36.49
TOTAL		5811620.	176396.	32.95

Johnson County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
CDB FRINGE	(2)	184.	2107.	295.	6.	12.
RESIDENTIAL	(3)	2042.	25744.	3767.	73.	134.
SUBURBAN CBD	(4)	256.	2840.	398.	9.	16.
RURAL	(5)	2217.	30309.	4468.	83.	152.
---TOTAL---		4699.	61000.	8927.	171.	314.
(TONS)		5.17	67.18	9.83	0.19	0.35

Johnson County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1207.	20211.	3215.	51.	94.
EXPRESSWAY	(2)	220.	3492.	494.	9.	17.
2-WAY ART w/prk	(3)	737.	9539.	1331.	28.	52.
CENTROID CONNECT	(5)	1022.	7358.	1070.	24.	42.
2-WAY ART wo/prk	(6)	1512.	20400.	2817.	59.	109.
---TOTAL---		4699.	61000.	8927.	171.	314.
(TONS)		5.17	67.18	9.83	0.19	0.35

DAILY TRAVEL STATS

Johnson County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
CDB FRINGE	(2)	129445.	3973.	32.58
RESIDENTIAL	(3)	1469394.	41519.	35.39
SUBURBAN CBD	(4)	172366.	5733.	30.06
RURAL	(5)	1666583.	38177.	43.65
TOTAL		3437786.	89402.	38.45

Johnson County



FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1030274.	17325.	59.47
EXPRESSWAY	(2)	184802.	3332.	55.46
2-WAY ART w/prk	(3)	568278.	13979.	40.65
CENTROID CONNECT	(5)	464420.	27628.	16.81
2-WAY ART wo/prk	(6)	1190014.	27138.	43.85
TOTAL		3437786.	89402.	38.45

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Hendricks County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	2045.	26114.	3828.	75.	137.
RURAL	(5)	1979.	26749.	4012.	73.	134.
---TOTAL---		4024.	52863.	7840.	148.	272.
(TONS)		4.43	58.22	8.63	0.16	0.30

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Hendricks County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1165.	20127.	3270.	50.	92.
2-WAY ART w/prk	(3)	509.	6340.	882.	19.	35.
CENTROID CONNECT	(5)	756.	5439.	791.	18.	31.
2-WAY ART wo/prk	(6)	1594.	20956.	2896.	61.	113.
---TOTAL---		4024.	52863.	7840.	148.	272.
(TONS)		4.43	58.22	8.63	0.16	0.30

DAILY TRAVEL STATS

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Hendricks County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	1500019.	40709.	36.85
RURAL	(5)	1471429.	34801.	42.28
TOTAL		2971450.	75511.	39.35

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Hendricks County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1002461.	16213.	61.83
2-WAY ART w/prk	(3)	387983.	9910.	39.15
CENTROID CONNECT	(5)	343308.	19859.	17.29
2-WAY ART wo/prk	(6)	1237696.	29529.	41.91
TOTAL		2971450.	75511.	39.35

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Hancock County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	2360.	32706.	4937.	90.	165.
SUBURBAN CBD	(4)	48.	556.	77.	2.	3.
RURAL	(5)	803.	9250.	1288.	28.	50.
---TOTAL---		3211.	42513.	6302.	119.	219.
(TONS)		3.54	46.82	6.94	0.13	0.24

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Hancock County

VOC	EXHST	EXHST	TOTAL
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FACILITY		HC	CO	NOx	PM2.5	NH3
FREEWAY	(1)	1196.	19614.	3107.	50.	93.
2-WAY ART w/prk	(3)	444.	5549.	771.	17.	31.
CENTROID CONNECT	(5)	558.	4019.	585.	13.	23.
2-WAY ART wo/prk	(6)	1014.	13331.	1839.	39.	72.
---TOTAL---		3211.	42513.	6302.	119.	219.
(TONS)		3.54	46.82	6.94	0.13	0.24

DAILY TRAVEL STATS

Hancock County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	1806708.	43348.	41.68
SUBURBAN CBD	(4)	33265.	1042.	31.94
RURAL	(5)	551847.	15614.	35.34
TOTAL		2391821.	60003.	39.86

Hancock County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1013264.	17533.	57.79
2-WAY ART w/prk	(3)	337730.	8624.	39.16
CENTROID CONNECT	(5)	253663.	15106.	16.79
2-WAY ART wo/prk	(6)	787162.	18740.	42.00
TOTAL		2391821.	60003.	39.86

Shelby County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	729.	10467.	1643.	28.	51.
SUBURBAN CBD	(4)	12.	149.	21.	0.	1.
RURAL	(5)	1669.	23933.	3676.	64.	117.
---TOTAL---		2411.	34549.	5340.	92.	168.
(TONS)		2.66	38.05	5.88	0.10	0.19

Shelby County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1331.	22905.	3710.	57.	105.
2-WAY ART w/prk	(3)	55.	711.	99.	2.	4.
CENTROID CONNECT	(5)	437.	3149.	458.	10.	18.
2-WAY ART wo/prk	(6)	588.	7785.	1073.	23.	42.
---TOTAL---		2411.	34549.	5340.	92.	168.
(TONS)		2.66	38.05	5.88	0.10	0.19

DAILY TRAVEL STATS

Shelby County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	554054.	13375.	41.42
SUBURBAN CBD	(4)	8916.	256.	34.77
RURAL	(5)	1280376.	27772.	46.10
TOTAL		1843346.	41404.	44.52

Shelby County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1144194.	18595.	61.53
2-WAY ART w/prk	(3)	42617.	1039.	41.00
CENTROID CONNECT	(5)	198727.	10984.	18.09
2-WAY ART wo/prk	(6)	457807.	10785.	42.45
TOTAL		1843346.	41404.	44.52

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Boone County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	342.	3719.	522.	11.	21.
SUBURBAN CBD	(4)	9.	108.	15.	0.	1.
RURAL	(5)	2590.	36842.	5578.	100.	183.
---TOTAL---		2941.	40669.	6115.	111.	204.
(TONS)		3.24	44.79	6.73	0.12	0.23

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Boone County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1459.	23900.	3778.	61.	113.
2-WAY ART w/prk	(3)	135.	1624.	228.	5.	9.
CENTROID CONNECT	(5)	491.	3536.	514.	11.	20.
2-WAY ART wo/prk	(6)	856.	11609.	1595.	34.	62.
---TOTAL---		2941.	40669.	6115.	111.	204.
(TONS)		3.24	44.79	6.73	0.12	0.23

DAILY TRAVEL STATS

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Boone County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	327258.	9268.	35.31
SUBURBAN CBD	(4)	6507.	203.	32.13
RURAL	(5)	2002745.	43281.	46.27
TOTAL		2336510.	52751.	44.29

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Boone County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	1336450.	22867.	58.45
2-WAY ART w/prk	(3)	99738.	2785.	35.82
CENTROID CONNECT	(5)	223166.	11967.	18.65
2-WAY ART wo/prk	(6)	677156.	15133.	44.75
TOTAL		2336510.	52751.	44.29

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Morgan County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	415.	5359.	756.	15.	28.
SUBURBAN CBD	(4)	2.	25.	4.	0.	0.
RURAL	(5)	2589.	33647.	4856.	94.	173.
---TOTAL---		3007.	39032.	5616.	110.	202.
(TONS)		3.31	42.99	6.19	0.12	0.22

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Morgan County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	373.	6451.	1049.	16.	29.
EXPRESSWAY	(2)	147.	2456.	357.	6.	11.
2-WAY ART w/prk	(3)	149.	1876.	260.	6.	10.
CENTROID CONNECT	(5)	631.	4543.	661.	15.	26.
2-WAY ART wo/prk	(6)	1707.	23706.	3289.	67.	124.
---TOTAL---		3007.	39032.	5616.	110.	202.
(TONS)		3.31	42.99	6.19	0.12	0.22

DAILY TRAVEL STATS

Morgan County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	305811.	8149.	37.53
SUBURBAN CBD	(4)	1508.	41.	37.11
RURAL	(5)	1897488.	46765.	40.57
TOTAL		2204807.	54954.	40.12

Morgan County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	320953.	5182.	61.94
EXPRESSWAY	(2)	125369.	2112.	59.36
2-WAY ART w/prk	(3)	114244.	2854.	40.03
CENTROID CONNECT	(5)	286727.	14938.	19.19
2-WAY ART wo/prk	(6)	1357514.	29869.	45.45
TOTAL		2204807.	54954.	40.12

Madison County

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
RESIDENTIAL	(3)	1784.	20895.	3000.	61.	113.
SUBURBAN CBD	(4)	99.	1209.	168.	4.	7.
RURAL	(5)	2634.	34610.	5099.	96.	177.
---TOTAL---		4517.	56714.	8267.	161.	296.
(TONS)		4.97	62.46	9.11	0.18	0.33

Madison County

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	1130.	18734.	2969.	48.	88.
2-WAY ART w/prk	(3)	7.	91.	13.	0.	1.
CENTROID CONNECT	(5)	1135.	8169.	1188.	26.	47.
2-WAY ART wo/prk	(6)	2245.	29720.	4097.	87.	160.
---TOTAL---		4517.	56714.	8267.	161.	296.
(TONS)		4.97	62.46	9.11	0.18	0.33

DAILY TRAVEL STATS

Madison County

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
RESIDENTIAL	(3)	1231188.	38483.	31.99
SUBURBAN CBD	(4)	73318.	1998.	36.70
RURAL	(5)	1934190.	46690.	41.43

TOTAL	3238696.	87171.	37.15
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 Madison County

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	961715.	16392.	58.67
2-WAY ART w/prk	(3)	5505.	136.	40.36
CENTROID CONNECT	(5)	515575.	29757.	17.33
2-WAY ART wo/prk	(6)	1755901.	40886.	42.95
TOTAL		3238696.	87171.	37.15

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 Total Model Area

AREA TYPE		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
CBD	(1)	1764.	21877.	3170.	64.	117.
CDB FRINGE	(2)	17341.	213438.	31164.	631.	1158.
RESIDENTIAL	(3)	31803.	390644.	57367.	1125.	2063.
SUBURBAN CBD	(4)	908.	10257.	1439.	31.	57.
RURAL	(5)	17445.	232722.	34389.	642.	1178.
---TOTAL---		69261.	868939.	127529.	2492.	4573.
(TONS)		76.28	956.98	140.45	2.74	5.04

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 Total Model Area

FACILITY		VOC HC	EXHST CO	EXHST NOx	TOTAL PM2.5	NH3
FREEWAY	(1)	21706.	338468.	53281.	894.	1646.
EXPRESSWAY	(2)	2838.	36711.	5153.	107.	197.
2-WAY ART w/prk	(3)	12969.	154333.	21692.	472.	868.
ONE-WAY ARTERIAL	(4)	967.	11419.	1611.	35.	65.
CENTROID CONNECT	(5)	11085.	79798.	11609.	257.	460.
2-WAY ART wo/prk	(6)	19340.	242585.	33660.	715.	1316.
FREEWAY RAMPS	(7)	356.	5624.	523.	11.	21.
---TOTAL---		69261.	868939.	127529.	2492.	4573.
(TONS)		76.28	956.98	140.45	2.74	5.04

DAILY TRAVEL STATS

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 Total Model Area

AREA TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
CBD	(1)	1278570.	37173.	34.39
CDB FRINGE	(2)	12675249.	358473.	35.36
RESIDENTIAL	(3)	22674086.	670834.	33.80
SUBURBAN CBD	(4)	624751.	20096.	31.09
RURAL	(5)	12888741.	310566.	41.50
TOTAL		50141528.	1397140.	35.89

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 Total Model Area

FACILITY TYPE		DAILY VMT	DAILY VHT	AVERAGE SPEED
FREEWAY	(1)	18115864.	341073.	53.11
EXPRESSWAY	(2)	2155330.	55189.	39.05
2-WAY ART w/prk	(3)	9500708.	273358.	34.76
ONE-WAY ARTERIAL	(4)	708847.	20334.	34.86
CENTROID CONNECT	(5)	5036498.	308889.	16.31
2-WAY ART wo/prk	(6)	14397146.	387204.	37.18
FREEWAY RAMPS	(7)	227011.	11094.	20.46
TOTAL		50141528.	1397140.	35.89